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THE HEAD-FORMS OF THE ITALIANS AS INFLUENCED BY HEREDITY AND ENVIRONMENT

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THE investigation of the head-forms of immigrants who come to the United States has shown that the head-forms of man are not quite stable when individuals belonging to a certain type are brought into a new environment. On the other hand, there is also evidence of a great stability of types and of the occurrence of several distinct types in the same area and in the same environment. Although these two observations are apparently contradictory, the phenomena may very well exist side by side, since the modification of types under environmental influences does not necessarily imply that distinct types will converge to a uniform type in the same environment.

Lack of stability of types has been observed by Ammon in Baden[1] and by Livi[2] in Italy, in their comparisons of urban and rural types. It has been brought forward recently by Johannes Ranke as explaining the differences between the population of the Alps and of southern Germany—differences which have continued through a long period. In all these cases it is conceivable that the populations compared may have a different composition, owing either to migration or to selective causes. The observations on American immigrants, however, show that there is also a difference

[1] *Natürliche Auslese beim Menschen*, 1893. *Zur Anthropologie der Badener*, 1899.
[2] *Antropometria Militare*, 1896.

between parents who have grown up in one environment and their children who were born in another environment.

The tendency of racial types to revert to their ancestral types, and not to form a new intermediate type, was first observed by Felix von Luschan[1] in his studies on the types of Asia Minor. His later studies have corroborated these observations. Since the mixture in Asia Minor has extended over a very long period, this observation is particularly important. Among the Jews of America it has been found that the variability of head-index of children of a family increases considerably with increasing difference of type of parents.[2] Whether or not these observations can be explained as conforming to some type of Mendelian inheritance cannot be stated. Various observations relating to color, which have been interpreted as expressing Mendelian inheritance in man, may also be adduced as proving the permanence of certain types.[3] For the first generation of hybrids a similar phenomenon was observed among American Indian half-bloods, whose width of face tends to revert to a type similar either to the European or to the American Indian type.[4]

It has seemed desirable to extend this study over new material; and we have investigated for this purpose the extended anthropometric tables in Ridolfo Livi's *Antropometria Militare*.

It so happens that in Italy two types quite distinct in head-form inhabit the extreme northern and the extreme southern part of the country. In the region of central Italy the two types have been in long-continued contact, and have consequently intermingled.

[1] Die Tachtadschy und andere Ueberreste der alten Bevölkerung Lykiens, *Archiv für Anthropologie*, vol. XIX, pp. 1–23; Petersen und von Luschan, *Reisen in Lykien, Milyas und Kibyratis*, Vienna, 1889.

[2] Franz Boas, *Changes in Bodily Form of Descendants of Immigrants*, New York, Columbia University Press, 1912.

[3] See, for instance, G. and Ch. Davenport, Heredity of Hair Colour in Man, *American Naturalist*, vol. 43, pp. 193–211; W. Weinberg, Ueber Vererbungsgesetze beim Menschen, *Zeitschrift für induktive Abstammungs- und Vererbungslehre*, vol. I, 1909, pp. 377–392, 440–460; vol. II, pp. 276–330; E. Fischer, Rassen und Rassenbildung, *Handwörterbuch der Naturwissenschaften*, vol. VIII, pp. 78 et seq.

[4] Franz Boas, Zur Anthropologie der nordamerikanischen Indianer, *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, vol. 27, 1895, p. 406 et seq.

It seemed plausible, therefore, that if the head-forms of mixed types tend to revert to the ancestral forms, in the north and south of Italy the variabilities of head-form should be low, in the central area high, because here both distinct types would be represented in the population.

We have therefore calculated the variability (standard or mean square variation) for each *circondario*, and have plotted the results on the accompanying map (pl. III), in which areas of equal variability are represented by the same tint. It will be seen at once that, on the whole, the highest variabilities are found in the central parts of Italy, and the lowest in the north and south; so that the theory with which we started appears to be borne out by the facts.

This result may also be expressed as follows: We find in central Italy two types of head-form represented, both with moderate variabilities, but with different averages,—that of southern Italy with a low average, that of northern Italy with a high average. The variabilities of these two types bring it about that we find in the population of the district in question very low values which belong to the South Italian type, and very high values which belong to the North Italian type; so that the whole area has a wide range of variation, which is expressed by a high variability. If a uniform intermediate type should develop through mixture, we should expect a lesser range of variation than we actually find.[1]

The determination of the variability could not be made directly from the series of *circondari* given in Livi's lists (pp. 205–229), because most of these districts are so large that the average index

[1] The effect of a purely mechanical mixture has been discussed by Livi (*Archivio per l'Antropologia e la Etnologia*, vol. XVI, pp. 254 et seq.; and *Antropometria Militare*, p. 29). He has shown that by mechanical mixture of two distinct types the variability would be increased, and has utilized this observation in the discussion of the amount of spreading of the curves of various *circondari*, without, however, stating in detail the variabilities and discussing the effects of intermarriage.

After the present paper was in type, we received Professor Corrado Gini's paper *Variabilità e Mutabilità* (Bologna, 1912), in which he calls attention to the greater variabilities found in the central parts of Italy as compared with the southern and northern parts of the peninsula (p. 31). He treats, however, only the larger units, the variabilities of which are increased on account of the differences of local types contained in them.

CIRCONDARIO	CEPHALIC INDEX	VARIABILITY	CORRECTED VARIABILITY	NUMBER OF CASES
Acqui	84.4	±3.66	±3.56	1191
Alessandria	85.1	±3.48	±3.42	1647
Asti	86.1	±3.97	±3.94	2063
Casale	86.2	±3.70	±3.64	1664
Novi	82.2	±3.75	±3.68	1038
Tortona	83.7	±3.69	±3.58	756
Alba	85.8	±3.78	±3.76	1438
Cuneo	86.6	±3.73	±3.66	1849
Mondovi	85.2	±4.14	±3.86	1696
Saluzzo	85.6	±3.97	±3.85	1724
Biella	86.6	±3.85	±3.81	1725
Domodossola	86.1	±3.35	±3.34	414
Novara	86.5	±3.61	±3.47	2528
Pallanza	86.5	±3.64	±3.62	767
Varallo	86.3	±3.63	±3.62	337
Vercelli	85.4	±3.50	±3.39	1671
Aosta	87.6	±3.54	±3.52	843
Ivrea	87.7	±3.56	±3.54	2051
Pinerolo	86.2	±4.09	±3.94	1521
Susa	85.8	±4.42	±4.36	948
Torino	86.1	±3.79	±3.72	4919
Albenga	81.9	±3.77	±3.68	543
Chiavari	82.6	±4.03	±3.95	1178
Genova	82.4	±3.73	±3.69	3337
Savona	83.0	±3.64	±3.62	946
Spezia	81.3	±3.88	±3.81	768
Porto Maurizio	82.1	±3.57	±3.47	531
San Remo	82.2	±3.82	±3.77	648
Bergamo	84.4	±3.45	±3.41	2407
Clusone	84.8	±3.28	±3.24	557
Treviglio	84.0	±3.25	±3.24	1116
Breno	84.5	±3.36	±3.31	555
Brescia	82.9	±3.57	±3.55	1895
Chiari	83.4	±3.33	±3.31	713
Salò	82.4	±3.44	±3.42	489
Verolanuova	84.0	±3.57	±3.57	580
Como	84.5	±3.46	±3.44	2791
Lecco	84.1	±3.56	±3.52	1367
Varese	85.3	±3.34	±3.25	1739
Casalmaggiore	85.5	±3.26	±3.26	440
Crema	84.2	±3.44	±3.43	730
Cremona	85.0	±3.49	±3.43	1726
Mantova	85.3	±3.78	±3.74	2802
Abbiategrasso	84.3	±3.27	±3.24	1168
Gallarate	83.8	±3.34	±3.31	1847
Lodi	85.3	±3.45	±3.42	1771
Milano	84.1	±3.34	±3.32	3550
Monza	84.4	±3.57	±3.55	1960
Bobbio	84.1	±3.88	±3.85	500

CIRCONDARIO	CEPHALIC INDEX	VARIABILITY	CORRECTED VARIABILITY	NUMBER OF CASES
Mortara	84.2	±3.18	±3.17	1574
Pavia	84.7	±3.62	±3.59	1480
Voghera	83.4	±3.79	±3.70	1357
Sondrio	85.7	±3.56	±3.48	1088
Belluno	85.2	±3.61	±3.59	2258
Padova	85.3	±3.72	±3.70	3921
Rovigo	84.6	±3.74	±3.72	2042
Treviso	85.2	±3.70	±3.69	3983
Udine	85.0	±3.69	±3.66	5289
Venezia	85.0	±3.86	±3.86	3094
Verona	84.4	±3.79	±3.67	3759
Vicenza	85.0	±3.59	±3.58	3833
Bologna	84.4	±3.75	±3.72	3576
Imola	86.1	±4.09	±4.08	772
Vergato	83.2	±3.91	±3.91	604
Cento	84.6	±3.71	±3.68	379
Comacchio	85.0	±3.84	±3.84	355
Ferrara	84.7	±3.51	±3.48	1654
Cesena	86.1	±3.76	±3.75	1030
Forlì	86.1	±4.00	±4.00	820
Rimini	85.7	±3.85	±3.84	1046
Mirandola	85.4	±3.83	±3.83	797
Modena	84.7	±3.91	±3.89	1513
Pavullo	85.2	±3.91	±3.91	867
Borgo S. Donnino	85.8	±3.76	±3.75	863
Borgotaro	84.7	±3.94	±3.93	409
Parma	84.6	±3.90	±3.79	1499
Fiorenzuola	85.6	±3.63	±3.63	881
Piacenza	84.6	±3.79	±3.68	1529
Faenza	86.8	±3.98	±3.98	917
Lugo	86.5	±3.87	±3.87	870
Ravenna	86.6	±3.86	±3.84	1019
Guastalla	86.0	±3.60	±3.59	774
Reggio Emilia	85.1	±3.84	±3.78	2057
Arezzo	83.9	±3.92	±3.90	2206
Firenze	82.9	±4.20	±4.17	4788
Pistoia	83.1	±4.24	±4.24	1262
Rocca San Casciano	85.5	±4.16	±4.10	557
San Miniato	83.0	±4.05	±3.83	1183
Grosseto	83.0	±4.02	±3.97	1089
Livorno	79.9	±4.09	±4.09	941
Portoferraio	78.4	±3.73	±3.67	199
Lucca	79.7	±4.32	±3.95	3475
Castelnuovo Garfagnana	78.2	±4.13	±4.11	574
Massa	80.3	±4.33	±4.11	1057
Pontremoli	83.3	±3.83	±3.75	394
Pisa	82.5	±4.11	±4.01	2480
Volterra	83.5	±4.18	±4.09	702
Montepulciano	83.4	±3.72	±3.59	755

CIRCONDARIO	CEPHALIC INDEX	VARIABILITY	CORRECTED VARIABILITY	NUMBER OF CASES
Siena	84.0	±4.08	±4.01	1360
Ancona	84.0	±4.53	±4.40	2953
Ascoli Piceno	81.8	±4.55	±4.30	1086
Fermo	84.2	±4.29	±4.11	1209
Camerino	81.5	±4.47	±4.44	590
Macerata	83.7	±4.75	±4.68	2207
Pesaro	85.4	±4.13	±4.02	1154
Urbino	85.8	±3.89	±3.88	1410
Foligno	84.2	±4.37	±4.35	742
Orvieto	83.8	±3.91	±3.91	588
Perugia	84.7	±4.04	±4.01	2315
Rieti	83.4	±4.27	±4.19	914
Spoleto	83.4	±4.31	±4.25	867
Terni	84.5	±4.37	±4 35	783
Civitavecchia	81.5	±3.71	±3.70	204
Frosinone	81.9	±4.22	±4.04	1677
Roma	80.2	±4.10	±4.01	3275
Velletri	80.2	±3.96	±3.86	823
Viterbo	81.7	±4.29	±4.11	1919
Aquila	81.2	±4.06	±3.95	1301
Avezzano	80.3	±3.69	±3.64	1188
Cittaducale	81.7	±4.25	±4.09	645
Sulmona	81.0	±3.84	±3.72	1025
Campobasso	81.3	±3.76	±3.62	1326
Isernia	82.0	±3.74	±3.69	1498
Larino	81.5	±3.52	±3.46	1002
Chieti	83.5	±4.40	±4.33	1175
Lanciano	83.5	±4.26	±3.93	1237
Vasto	82.8	±4.08	±3.99	1348
Penne	82.3	±4.29	±4.12	1008
Teramo	81.2	±3.97	±3.91	1621
Ariano	81.2	±4.01	±3.89	920
Avellino	81.9	±3.90	±3.85	1860
Sant' Angelo de' Lombardi	80.7	±4.01	±4.00	1315
Benevento	81.7	±4.03	±3.86	970
Cerreto Sannita	80.7	±3.94	±3.71	737
San Bartolomeo in Galdo	80.7	±3.75	±3.66	609
Caserta	81.6	±3.56	±3.53	2903
Gaeta	80.2	±3.50	±3.48	1476
Nola	82.4	±3.42	±3.40	947
Piedimonte d'Alife	81.6	±3.68	±3.65	503
Sora	83.2	±4.22	±3.87	1578
Casoria	82.0	±3.37	±3.36	1544
Castellamare di Stabia	82.9	±3.58	±3.54	1480
Napoli	82.6	±3.55	±3.55	5543
Pozzuoli	83.4	±3.50	±3.39	542
Campagna	81.9	±3.82	±3.74	1142
Sala Consilina	82.7	±3.89	±3.73	923
Salerno	83.4	±3.62	±3.59	2588

CIRCONDARIO	CEPHALIC INDEX	VARIABILITY	CORRECTED VARIABILITY	NUMBER OF CASES
Vallo Lucania	81.8	±4.02	±3.91	1034
Altamura	81.1	±4.11	±3.93	1118
Bari	81.0	±4.15	±3.96	3076
Barletta	80.2	±3.79	±3.54	3091
Bovino	80.2	±3.55	±3.51	527
Foggia	80.3	±3.71	±3.67	1443
Sansevero	80.2	±3.48	±3.35	1308
Brindisi	79.3	±3.83	±3.70	1250
Gallipoli	77.9	±3.71	±3.67	1457
Lecce	77.5	±3.71	±3.65	1395
Taranto	79.2	±3.98	±3.91	1412
Lagonegro	79.4	±4.06	±3.76	1518
Matera	81.5	±3.70	±3.56	957
Melfi	80.4	±3.57	±3.45	1315
Potenza	81.7	±4.01	±3.75	2108
Catanzaro	78.7	±4.22	±4.15	1135
Cotrone	78.2	±3.64	±3.55	516
Monteleone	77.9	±4.07	±3.93	1100
Nicastro	79.0	±4.21	±4.05	921
Castrovillari	78.1	±3.59	±3.53	1364
Cosenza	77.5	±3.58	±3.57	2239
Paola	78.2	±3.75	±3.70	1220
Rossano	78.2	±3.67	±3.59	763
Gerace	79.0	±4.05	±4.00	1186
Palmi	78.2	±3.81	±3.79	1273
Reggio Calabria	79.8	±3.94	±3.88	1395
Caltanissetta	79.7	±3.55	±3.51	1328
Piazza Armerina	78.9	±3.33	±3.30	1069
Terranova	79.8	±3.72	±3.72	818
Acireale	80.4	±4.10	±3.95	1306
Caltagirone	79.9	±3.74	±3.70	1248
Catania	79.6	±3.77	±3.63	2384
Nicosia	79.0	±3.48	±3.44	1088
Bivona	79.6	±3.66	±3.61	737
Girgenti	80.3	±3.85	±3.78	2259
Sciacca	80.0	±3.77	±3.72	623
Castroreale	78.7	±3.76	±3.71	1071
Messina	79.6	±3.45	±3.42	2215
Mistretta	78.2	±3.48	±3.46	627
Patti	77.9	±3.68	±3.66	1104
Cefalù	79.2	±3.62	±3.47	1158
Corleone	78.8	±3.81	±3.80	661
Palermo	79.3	±3.77	±3.73	4504
Termini	78.5	±3.44	±3.42	1437
Modica	80.8	±3.60	±3.56	1846
Noto	80.5	±3.67	±3.61	803
Siracusa	80.3	±3.73	±3.67	1092
Alcamo	79.1	±3.52	±3.49	870
Mazzara del Vallo	79.8	±3.59	±3.57	913

CIRCONDARIO	CEPHALIC INDEX	VARIABILITY	CORRECTED VARIABILITY	NUMBER OF CASES
Trapani	80.6	±3.26	±3.24	1365
Cagliari	77.5	±4.32	±4.11	1533
Iglesias	77.2	±3.98	±3.79	590
Lanusei	76.4	±3.56	±3.46	648
Oristano	77.2	±3.74	±3.56	1330
Alghero	78.6	±3.96	±3.89	390
Nuoro	77.2	±3.97	±3.92	558
Ozieri	77.4	±3.71	±3.64	405
Sassari	78.4	±3.79	±3.73	826
Tempio	79.0	±3.49	±3.47	299

shows considerable differences in various parts of each *circondario*. For this reason we have assumed the variability to be the same in all the *mandamenti* of the *circondario*, and then reduced the total variability accordingly. If the average cephalic indices of the *mandamento* and *circondario* are respectively i_m and i_c, and the unreduced standard deviation of the whole *circondario* is σ_1, the reduced variability of the cephalic indices of the *circondario* σ, then

$$\sigma^2 = \sigma_1^2 - [(i_m - i_c)^2],$$

where brackets indicate the process of averaging.

In this way the foregoing values have been obtained.

The map (pl. III) has been constructed by assuming the variability here given for the center of each *circondario* and interpolating between neighboring *circondari* in the same way as is done in meteorological maps, in maps of density of population,—a method that has been applied to anthropological data by Dr Jan Czekanowski. Of course, the lines are only approximate, particularly where the *circondari* are large.

Before taking up the discussion of the observed distribution of variabilities, it is necessary to discuss the accuracy of the values obtained by the method just described.

Owing to the inaccuracies of the measurements on which this study is based, it seems necessary to investigate in how far these inaccuracies exert a uniform influence over the variabilities given in Dr Livi's tables, particularly whether there are regions in which unusual accuracy or inaccuracy unduly decreases or increases the

Cephalic Index	Piemonte		Liguria		Lombardia		Veneto		Emilia		Toscana		Marche		Umbria	
	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed
72	—	—	—	—	—	—	—	—	—	—	0.5	0.7	—	—	—	—
73	—	—	—	—	—	—	—	—	—	—	0.9	0.9	—	—	—	—
74	—	—	1.8	1.1	0.2	0.2	—	—	—	—	1.4	1.9	0.7	1.0	0.5	0.5
75	0.4	0.3	2.8	1.3	0.3	0.3	0.3	0.3	0.3	0.3	2.1	2.5	1.2	1.2	0.9	0.7
76	0.4	0.5	4.0	2.7	0.7	0.7	0.6	0.6	0.7	0.6	3.1	3.5	1.8	2.1	1.4	1.5
77	0.8	0.8	5.7	3.9	1.3	1.2	1.1	1.0	1.1	1.0	4.4	4.8	2.6	2.6	2.3	2.4
78	1.3	1.3	7.0	4.8	2.2	2.0	1.8	1.6	1.8	1.8	5.5	5.0	3.5	3.7	3.3	3.0
79	2.2	2.6	8.7	9.1	3.6	4.0	2.9	3.5	2.9	3.1	7.1	8.8	4.9	6.0	4.6	6.0
80	3.3	2.5	9.8	7.7	5.2	4.0	4.4	3.5	4.2	3.4	7.9	6.2	5.9	4.6	5.9	4.8
81	4.5	3.8	9.9	8.7	7.0	6.2	6.1	5.1	5.8	5.0	9.1	7.5	7.3	6.3	7.3	6.3
82	6.3	6.2	10.2	11.8	8.9	9.9	7.7	8.4	7.1	7.8	9.5	9.6	7.9	8.7	8.4	8.9
83	7.9	7.6	9.0	9.5	10.6	10.5	9.4	9.4	8.8	8.4	9.0	8.3	8.9	8.3	9.2	9.2
84	8.8	10.7	8.2	11.8	11.1	14.3	10.3	13.0	9.9	12.3	8.8	10.3	8.8	9.9	9.6	11.6
85	10.1	7.7	6.4	6.9	11.0	9.4	10.4	8.7	10.3	8.6	7.8	5.6	8.9	6.0	8.9	7.3
86	10.0	12.7	5.0	7.2	10.0	11.7	10.3	12.4	10.1	11.9	6.3	7.3	7.9	10.8	8.7	9.8
87	9.9	8.3	3.6	4.0	8.6	7.0	9.4	7.7	8.9	7.5	5.2	4.3	7.3	5.4	7.5	5.9
88	9.0	7.3	2.3	2.4	6.7	5.0	7.7	6.1	8.0	6.1	3.8	3.1	5.9	4.3	6.2	5.1
89	7.2	11.6	1.5	3.2	5.0	7.0	6.1	8.5	6.5	9.4	2.6	4.4	4.9	7.6	4.8	7.2
90	6.0	4.0	0.9	0.9	3.2	2.1	4.4	2.9	4.8	3.4	1.9	1.5	3.5	2.4	3.6	2.4
91	4.3	4.4	0.4	0.9	2.0	1.9	2.9	2.8	3.2	3.3	1.1	1.4	2.6	2.9	2.4	2.5
92	3.0	3.1	0.5	0.6	1.2	1.1	1.8	1.9	2.3	2.5	—	—	1.8	1.9	1.7	1.8
93	2.0	1.4	—	—	0.6	0.5	1.1	0.7	1.4	1.0	—	—	1.2	0.8	1.0	0.9
94	1.2	2.0	—	—	0.3	0.6	0.6	1.1	0.8	1.4	—	—	0.7	1.6	0.6	0.4
95	0.7	0.4	—	—	—	—	0.3	0.3	0.4	0.3	—	—	—	—	—	—
96	0.4	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
97	0.3	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Cephalic Index	Lazio		Abruzzi		Campania		Puglie		Basilicata		Calabrie		Sicilia		Sardegna	
	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed	Theoretical	Observed
68	—	—	—	—	—	—	—	—	—	—	0.3	0.1	—	—	0.6	0.4
69	—	—	—	—	—	—	—	—	—	—	0.5	0.3	—	—	1.0	0.7
70	—	—	—	—	—	—	0.5	0.3	—	—	1.1	0.6	0.4	0.3	1.6	1.3
71	0.5	1.0	—	—	—	—	1.0	0.7	0.5	0.3	1.7	1.3	0.8	0.5	2.6	2.1
72	1.0	0.7	0.6	0.4	0.3	0.3	1.6	1.5	1.9	0.8	2.7	2.6	1.4	1.2	4.0	3.7
73	1.5	1.0	1.0	0.7	0.6	0.4	2.4	1.7	1.5	1.1	4.0	3.5	2.2	1.5	5.2	5.0
74	2.3	2.6	1.5	1.6	1.1	1.1	3.6	4.1	2.3	2.5	5.3	6.5	3.4	4.1	6.8	9.6
75	3.4	3.7	2.5	2.2	1.9	1.5	4.8	4.2	3.5	2.7	7.1	7.3	5.1	4.6	8.1	8.3
76	4.7	5.3	3.6	3.6	2.9	2.9	6.4	7.6	4.8	5.3	8.2	10.6	6.7	7.8	9.6	12.1
77	6.0	6.7	4.8	5.1	4.2	4.1	7.5	8.3	6.3	6.3	10.1	10.3	8.5	8.9	9.9	9.1
78	7.4	7.7	6.2	6.5	5.8	6.0	9.0	8.8	7.8	8.5	9.9	10.9	9.8	10.8	9.9	10.8
79	8.5	11.6	7.5	9.6	7.7	9.5	9.8	13.0	9.0	10.7	9.8	12.2	10.2	13.4	9.6	10.5
80	9.3	7.4	8.7	7.2	8.9	7.4	9.5	7.9	9.7	7.9	9.5	6.8	10.7	8.4	8.1	5.4
81	9.6	9.2	8.9	9.5	9.9	9.6	9.6	9.3	10.3	10.9	8.0	6.9	10.0	9.4	6.8	5.7
82	9.3	9.0	9.6	10.9	10.8	11.6	8.2	8.6	9.5	9.6	6.8	5.9	8.7	8.2	5.2	4.5
83	8.5	7.9	9.2	8.9	10.0	10.7	7.4	6.6	8.6	8.5	5.0	4.4	7.1	6.5	4.1	3.6
84	7.4	7.8	8.4	9.2	9.2	10.8	5.6	5.8	7.2	7.8	3.8	3.2	5.2	5.5	2.5	2.3
85	6.0	4.0	7.3	5.0	7.7	5.5	4.4	2.8	5.7	4.4	2.5	1.6	3.8	2.4	1.6	1.2
86	4.7	5.3	5.9	6.9	6.4	6.9	3.2	3.4	4.3	4.4	1.5	1.8	2.5	2.6	1.0	1.2
87	3.4	2.3	4.6	3.3	4.5	3.3	2.0	1.6	3.0	2.6	0.9	0.8	1.5	1.1	0.6	0.6
88	2.3	1.9	3.2	2.1	3.2	2.3	1.3	1.0	1.9	1.8	0.5	0.5	0.9	0.8	—	—
89	1.5	2.6	2.3	3.7	2.0	3.2	0.7	1.3	1.2	1.7	—	—	0.4	1.0	—	—
90	1.0	0.7	1.5	1.1	1.2	0.9	0.5	0.4	0.7	0.4	—	—	0.2	0.2	—	—
91	0.5	0.7	0.9	0.9	0.7	0.8	—	—	0.4	0.5	—	—	—	—	—	—
92	—	—	0.5	0.5	0.4	0.6	—	—	—	—	—	—	—	—	—	—

variability of the index. Dr Livi has called attention to these inaccuracies and to the fact that in many cases the measurements of length and width of head have been rounded off to the nearest half-centimeter,[1] and that, owing to this procedure, certain indices occur rarely or not at all. This phenomenon is expressed clearly in all the graphical representations of the distribution of cephalic indices. In order to obtain a clearer insight into the process of rounding off, we have assumed that the true distribution for every *circondario* follows the exponential law—an assumption which, of course, is only an approximation. We then determined the ratio between the value found in the theoretical distribution and that in the observed distribution. The foregoing table gives the results of our study.

From this table we have calculated the ratio between the observed frequencies and the theoretical frequencies (the observed divided by the theoretical frequencies). Livi has shown that, when the cephalic index is calculated from diameters given in half-centimeters, the indices 90, 88, 87, 85, and 80 must be rare, while 86 and 79 must be frequent. This phenomenon appears very clearly in the following table, and it may be observed that the tendencies are quite evenly distributed over all the provinces, so

Cephalic Index	73	74	75	76	77	78	79	80	81
Liguria	—	—	—	—	—	0.68	1.05	0.78	0.87
Lombardia	—	—	—	—	—	—	—	—	0.89
Veneto	—	—	—	—	—	—	—	—	0.89
Emilia	—	—	—	—	—	—	—	—	0.86
Toscana	—	—	—	—	—	0.91	1.25	0.79	0.82
Marche	—	—	—	—	—	—	—	0.78	0.86
Umbria	—	—	—	—	—	—	—	0.82	0.86
Lazio	—	—	—	—	1.12	1.04	1.37	0.79	0.96
Abruzzi	—	—	—	—	—	1.05	1.28	0.83	1.07
Campania	—	—	—	—	—	1.04	1.23	0.81	0.97
Puglie	—	—	—	1.19	1.11	0.98	1.33	0.83	0.96
Basilicata	—	—	—	—	1.00	1.09	1.19	0.81	1.06
Calabrie	—	1.23	1.03	1.29	1.02	1.11	1.24	0.72	0.84
Sicilia	—	—	0.90	1.16	1.04	1.10	1.31	0.79	0.94
Sardegna	0.96	1.41	1.02	1.26	0.91	1.09	1.09	0.67	0.84

[1] L'indice cefalico degli Italiani, *Archivio per l'Antropologia e la Etnologia*, vol. XVI (1886), p. 253; *Antropometria Militare*, pp. 80 et seq.

Cephalic Index	82	83	84	85	86	87	88	89	90
Piemonte	0.98	0.96	1.22	0.76	1.27	0.84	0.81	1.61	0.67
Liguria	1.16	1.06	1.44	1.08	1.44	—	—	—	—
Lombardia	1.11	0.99	1.29	0.85	1.17	0.82	0.79	1.40	—
Veneto	1.09	1.00	1.26	0.84	1.21	0.82	0.79	1.40	—
Emilia	1.01	0.95	1.24	0.83	1.18	0.84	0.76	1.45	—
Toscana	1.01	0.92	1.16	0.72	1.11	0.83	—	—	—
Marche	1.10	0.93	1.13	0.67	1.37	0.74	0.73	—	—
Umbria	1.06	1.00	1.21	0.82	1.13	0.79	0.82	—	—
Lazio	0.97	0.93	1.05	0.67	1.13	—	—	—	—
Abruzzi	1.14	0.97	1.09	0.68	1.19	—	—	—	—
Campania	1.07	1.07	1.17	0.71	1.09	—	—	—	—
Puglie	1.05	0.89	1.04	—	—	—	—	—	—
Basilicata	1.01	0.99	1.08	0.77	—	—	—	—	—
Calabrie	0.87	0.88	—	—	—	—	—	—	—
Sicilia	0.94	0.92	1.06	—	—	—	—	—	—

that we have no reason to suppose that the method of observation was materially different in different areas.

The unweighted averages of this series give the following results, which indicate, in connection with the preceding table, that approximately the same errors are found in all the different parts of the country.

Cephalic index	Ratio between observed and theoretical frequency
73	0.96
74	1.32
75	0.98
76	1.22
77	1.03
78	1.00
79	1.23
80	0.78
81	0.91
82	1.04
83	0.96
84	1.17
85	0.78
86	1.21
87	0.81
88	0.78
89	1.46
90	0.67

The question then presents itself, what the relation may be between the true variability and the one derived from Livi's material. In order to examine this point we may compare the general data for Reggio Emilia obtained by Livi himself with an exact instrument[1] and the observations in his *Antropometria Militare* (p. 237).

1. Livi's own observations, $\sigma^2 = 12.61$, 1145 cases.
2. General statistics, $\sigma^2 = 15.89$, 2831 cases.

The difference in σ^2 is therefore 3.28, which indicates the amount of inaccuracy introduced by the process of rounding off and by errors of measurement.[2]

	Livi		Boas		Diff.	Error
	σ^2	Cases	σ^2	Cases		
Caserta	14.44	7407	11.40	119	−3.04	±1.7
Chieti	18.01	3760	12.13	63	−5.88	±2.6
Campobasso	13.61	3826	14.76	82	+1.15	±2.2
Avellino	15.61	4095	12.89	163	−2.72	±1.6
Napoli	12.35	9109	8.06	210	−4.29	±1.0
Salerno	14.89	5687	13.50	441	−1.39	±1.0
Bari	15.78	7285	9.42	147	−6.36	±1.5
Potenza	16.00	5898	13.25	544	−2.75	±0.9
Cosenza	13.48	5586	14.88	244	+1.40	±1.3
Messina	12.85	5017	11.26	431	−1.59	±0.8
Palermo	13.33	7760	9.27	1240	−4.06	±0.4
Trapani	12.07	3148	10.95	90	−1.12	±1.7
Caltanisetta	11.67	3215	9.17	65	−2.50	±1.8
Girgenti	14.53	3619	9.68	175	−4.85	±1.3
Catania	14.77	6026	10.31	170	−4.36	±1.3

We have also investigated this question by comparing Livi's observations with those taken on American immigrants. The material thus discussed consists of the family observations included in the study of American immigrants and their descendants.[3] In the comparison of these data it must be borne in mind that the place of birth of the immigrants is not as accurately determined as

[1] L'indice cefalico degli Italiani, *Archivio per l'Antropologia e la Etnologia*, vol. XVI, p. 252.

[2] We do not know whether Livi's own observations are contained in the larger series. If they are contained in it, the inaccuracy would be a little larger; the difference in σ^2 would be about 5.

[3] Franz Boas, *Changes in Bodily Form of Descendants of Immigrants.*

that of the individuals recorded in Livi's military statistics, and that certain errors may have been introduced by lack of accurate information bearing on this point. The foregoing table contains the results of this comparison.

The average difference resulting from these series, taking into consideration the errors, is 2.91 in favor of the series measured in America. If we disregard the effect of rounding off, which it is not quite easy to take into account, since we have no data indicating how many measurements in each series have been rounded off, we may determine the inaccuracy of the measurement on this basis. If we call breadth and length of head b and l respectively, the individual's variations x and y, the errors v and w, the head-index c, then

$$c = 100\frac{b + x + v}{l + y + w};$$

and with sufficient accuracy,

$$c = 100\frac{b}{l} + 100\frac{b}{l}\left(\frac{x}{b} - \frac{y}{l} + \frac{v}{b} - \frac{w}{l}\right).$$

$$\sigma_1^2 = 10{,}000\frac{b^2}{l^2}\left[\left(\frac{x}{b} - \frac{y}{l}\right)^2\right] + 10{,}000\frac{b^2}{l^2}\left[\left(\frac{v}{b} - \frac{w}{l}\right)^2\right].$$

Here $10{,}000\frac{b^2}{l^2}\left[\left(\frac{x}{b} - \frac{y}{l}\right)^2\right] = \sigma^2$, the variability of the head-index unaffected by errors of observation. We may write, therefore,

$$\sigma_1^2 - \sigma^2 = 10{,}000\frac{b^2}{l^2}\left(\frac{[v^2]}{b^2} + \frac{[w^2]}{l^2}\right).$$

We have, of course, no means of determining the errors in b and l separately, and may assume that errors in the two measurements are approximately equal. We will call the mean square error in these measurements s^2. Then

$$\sigma_1^2 - \sigma^2 = 10{,}000s^2\frac{b^2}{l^2}\left(\frac{1}{b^2} + \frac{1}{l^2}\right).$$

If we assume b and l as approximately 150 mm. and 190 mm., the values characteristic of southern Italy, we find

$$\sigma_1^2 - \sigma^2 = .52s^2$$
$$s^2 = 5.6$$
$$s = \pm 2.4 \text{ mm.}$$

In other words, the mean square error, including the effect of rounding off, of length of head and width of head in the general statistics of the *Antropometria Militare*, must be about ± 2.4 mm.

The difference between the variability obtained by Livi and that obtained from the series of immigrants is fairly uniform. There are only two regions where the variabilities obtained by Livi are less than those obtained from the study of the immigrants. These regions are Campobasso and Cosenza. The series of mean square errors of the differences shows clearly that the variations in our results are, on the whole, unimportant. The differences for Palermo, however, suggest an exceptionally great inaccuracy.

We have also compared the averages obtained by Livi and those obtained by the measurements of immigrants. The results of this comparison are given in the following table.

	Livi		Boas		Diff.	Error
		Cases		Cases		
Caserta	81.8 ± 3.80	7407	80.3 ± 3.38	119	−1.5	±0.3
Chieti	83.3 ± 4.24	3760	81.9 ± 3.48	63	−1.4	±0.4
Campobasso	81.6 ± 3.69	3826	82.0 ± 3.84	82	+0.4	±0.4
Avellino	81.4 ± 3.95	4095	80.6 ± 3.59	163	−0.8	±0.3
Napoli	82.6 ± 3.51	9109	80.9 ± 2.84	210	−1.7	±0.2
Salerno	82.7 ± 3.86	5687	81.0 ± 3.67	441	−1.7	±0.2
Bari	80.7 ± 3.97	7285	79.6 ± 3.07	147	−1.1	±0.3
Potenza	80.8 ± 4.00	5898	81.3 ± 3.64	544	+0.5	±0.2
Cosenza	77.9 ± 3.68	5586	77.6 ± 3.86	244	−0.3	±0.2
Messina	78.8 ± 3.58	5017	77.8 ± 3.36	431	−1.0	±0.2
Palermo	79.1 ± 3.66	7760	77.6 ± 3.04	1240	−1.5	±0.1
Trapani	80.0 ± 3.47	3148	78.7 ± 3.30	90	−1.3	±0.4
Caltanisetta	79.4 ± 3.42	3215	78.3 ± 3.03	65	−1.1	±0.4
Girgenti	80.1 ± 3.81	3619	78.8 ± 3.10	175	−1.3	±0.3
Catania	79.7 ± 3.85	6026	77.8 ± 3.20	170	−1.9	±0.3

It will be seen that almost everywhere the cephalic index obtained in America is less than the cephalic index obtained in Italy, the difference being, on the average, 1.03 units. Here, again, there are only two regions where the average index in America exceeds the index found in Europe. These regions are Campobasso and Potenza. It does not seem improbable that the average value in America may be affected in some cases by the uneven representation

of different parts of the same province, which would naturally result in an index different from the one found in Italy. We think, however, that the regular difference is due to differences in the method of measuring. It is a well-known fact that in hasty observations errors in the length of the head must almost always result in values which are a little below the true value, because a change in the point on which the compasses are placed in front, and a deviation from the medial line on the occiput, will both result in a shortening of the line measured. The only cause of excessive measurements in the length of head is found in the slipping of the compasses when they are taken off, and this is usually one of the first errors that observers guard against.

On the other hand, rapid measurement of the width of the head is liable to result in increased values, when the measurement is not taken in an accurately transversal direction; in other words, if one of the points of the compasses is a little more forward than the other one. In this case the diagonal measurements are always greater than the true measurements. On the other hand, inexperienced observers are quite liable to obtain too small results in cases where they do not move the compasses far enough back. On the whole, we might therefore expect, in measurements taken by observers without a great deal of experience in anthropometric work, and necessarily very rapidly, that the length of the head would be too small and the width of the head approximately accurate.

We have calculated from the data contained in the preceding table the error which would result in the observed difference, provided that an equal error, but in opposite directions, were made in the length of the head and the width of the head. This error (in other words, the average personal equation of the observers) would be −1.03 mm. If the error is calculated on the assumption that the width of the head is correctly given and an error made in the length of the head, the latter error would be −2.48 mm.

We may, therefore, infer that the material presented by Livi gives, on the whole, an adequate basis of a discussion of the variability of the cephalic index, provided we confine ourselves to the material collected according to Dr Livi's methods. We have no

means of determining whether the values of Emilia should not be slightly increased, since Dr Livi's accurate measurements may be contained in them.

A glance at the map shows that, on the whole, the largest variabilities are found in central Italy where the two distinct types of northern Italy and of southern Italy have intermingled.

Before we discuss this distribution in greater detail, it remains to be shown that the amount of increase of variability of the cephalic index due to the mixture of two types like the South Italian and North Italian is large enough to account for the increase that has been observed. The maximum variability is found in Macerata, and is ± 4.68; its square 21.90. The average index for this *circondario* is 83.7. If we imagine this type composed of one type of an index of about 86 representing northern Italy and one of an index of about 79 representing southern Italy, we must assume that the latter occurs with a frequency of 0.5 of the former. If we assume the variabilities of the component elements as ± 3, then the square of the total standard variability would be 22.3, approximately the value found in Macerata.[1] This, of course, is intended only as an indication that the increases of variability *may* be produced by such mixture, not as an analysis of the series, which would be quite arbitrary on the basis of available observations.

It seems to us, therefore, that the distribution of the amounts of the observed differences in the variability of the cephalic indices agrees, on the whole, with the theory with which we started. Since, furthermore, the theory is in accord with observations quoted before, it seems to be a plausible explanation of the observed facts.

We are not inclined, however, to claim that mixture is necessarily the sole reason for the distribution of variabilities. It might

[1] If the frequency of the type with average index 86 is called 1, that of the type with average index 79 is called n,

$$\frac{86 + 79n}{1 + n} = 83.7;$$

and the variability of the whole series, 9 being the square of the component series, and their distances from the general average 2.3 and 4.7 respectively,

$$\sigma^2 = 9 + \frac{2.3^2 + n4.7^2}{1 + n}$$

very well be that certain local causes increase or decrease the variability of the cephalic index. We shall revert to this subject later. It would seem, however, a curious coincidence if the region of increased variability due to environmental causes should be the same as the one where we should expect increased variability due to mixture.

One objection that might be raised against our interpretation of the observed facts deserves mention. If the population were very mobile, it might be that people of adjoining parts of the country lived in any particular district, and that therefore without any intermarriage the variability might be increased wherever there are considerable changes in the cephalic index over short distances. The census of the country districts shows, however, that this is not the case. Even if we admit a very extended migration over a radius of about 60 miles, so that there should be an even distribution of types over such an area, a simple calculation shows that the increase of the variability due to this cause, considering only individuals of one generation, would be so small that it could not account for the differences in variability in different parts of the country. For instance, in one of the districts where extreme values of the cephalic index come near together, in Camarino, in the Province of Macerata, the square of the standard variability, with an even distribution of all the types occurring in the adjoining *circondari*, would be increased by about 1.5 units, while in reality it exceeds the lowest values found in Italy by 9 units. It appears, therefore, that if the increased variability is to be explained as due to mixture of types, it must be an old and much more extended mixture.

A few regions of Italy offer points of special interest when considered from these points of view. While in the greater part of the valley of the Po a uniformly low variability prevails, there is a very rapid increase westward toward the French border. In this region the long-headed Ligurian type comes into close contact with the short-headed Alpine type; and in those areas where the variability is great, the transition from long-headed to short-headed areas is very rapid. In Tuscany, particularly on the western coast,

the conditions are similar, the type of the region of Lucca contrasting strongly with the type of the interior. It is rather interesting to note that in both these areas the increase of variability is in the interior, as though the influence of the mountain people on the coast type had been very slight, the reverse influence strong. All along the western coast of Italy the variabilities remain rather low, although between Tuscany and the region south of Rome they are relatively high. By far the highest values are found on the Adriatic side, in the Apennine region. It is conceivable that the fact that Italy faces here the Balkan peninsula, the northern parts of which are occupied by round-headed people, may have exerted an influence upon the head-forms. If South Italians, types of the Po valley, types of the Balkan peninsula, and Ligurians intermingled here and retained their types, high variabilities like those found here would result. It is noteworthy, however, that in Larino and Sansevero the variability is low, although Slavic and Albanese colonies have existed there for a long period.[1] Farther to the south there is a minimum of variability in the district crossing Italy between points near Naples and Foggia, while farther south the values are rather low and quite uniform. They vary around ± 3.75, one of the dividing-lines of groups selected for our map; so that the uniformity is somewhat obscured by the occurrence of two zones in this area, which, however, represent values very much alike. Higher values are found in a small district inland, east of Naples, where the variability is almost ± 4. Another district of higher variability is situated in southern Calabria, where a considerable infusion of Albanese blood has occurred. Livi has shown that there is no appreciable difference in type between the inhabitants of Italian and Albanese villages of Calabria; but it is quite possible that the whole area may be affected by the infusion of Albanese blood which has continued for more than four hundred years. There is no trace of a disturbing influence in the ancient Illyrian territory in southern Italy.

Notwithstanding all the irregularities of distribution of varia-

[1] F. L. Pullé, Profilo Antropologico dell' Italia, *Archivio per l'Antropologia*, 1898, XXVIII, pp. 110 et seq., pl. II.

bility of the cephalic index, the fact remains that in a broad strip occupying the middle portion of the country,—roughly speaking, between Ravenna and Chieti on the Adriatic side, Lucca and Rome on the Ligurian and Tirrenian side,—the bulk of high variabilities are found.

Before we turn to the consideration of these data from another standpoint, we desire to call attention to the fact that the mixture which has taken place in central Italy extends over very long periods, so that opportunity for Mendelian segregation would present itself. The conditions are the same among the Lycian Greeks whom Dr von Luschan discusses. In that area the difference between the component types is so great that the very high variability of ± 6.8 results,—a value which is not equaled in any territory where a fairly homogeneous population resides.

It would seem that similar increases of variability occur in other areas where a long-continued mixture of types may be proved to exist. Thus the Alaskan Eskimo, who are undoubtedly a mixture of long-headed eastern Eskimo and of short-headed northwestern Indians, have the high variability of ± 4.3,[1] while the Indians have a variability of only about ± 3.[1] In California, where the long-headed Yuki, who have an average index of 77.4, adjoin shorter-headed tribes, the former have a variability of ± 2.9 (48 cases); the neighboring Pomo, an average index of 81.0 ± 3.8 (28 cases); the Maidu and Pit River jointly, of 80.5 ± 3.7 (68 cases).[2]

In British Columbia, Washington, and Oregon similar phenomena seem to occur, although they are not so clear.

The anthropometric and ethnological evidence indicate that a mixture of several types has occurred in the area of the Lower Fraser river and in the Lillooet valley, and here the highest variabilities are found. In Oregon, where we approach the types of

[1] These data have been computed from the materials published in F. Boas, Zur Anthropologie der nordamerikanischen Indianer, *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, XXVII [1895], p. 391; and Physical Characteristics of the Tribes of British Columbia, *Twelfth and Final Report on the North-Western Tribes of Canada* [1898], pp. 628 et seq.

[2] See F. Boas, Anthropometry of Central California, *Bulletin of the American Museum of Natural History*, XVII [1905], pp. 347–380.

California with more elongated heads, the variability of the cephalic index rises again. The numbers of cases at our disposal are, however, so small that these values must be taken as indications only, not as the true expression of the actual conditions.

	Cephalic Index	Cases
Haida, Nass, Tsimshian	82.7 ± 3.1	110
Bellacoola, Kwakiutl	84.3 ± 3.1	61
Delta and Canyon of Fraser River	86.0 ± 3.5	134
Harrison Lake	88.7 ± 4.0	35
Lillooet	86.0 ± 3.7	103
Upper Thompson	83.2 ± 3.6	135
Shuswap	84.5 ± 3.1	213
Coast of Washington	84.2 ± 3.3	40
Tinneh of Oregon	84.0 ± 3.7	57

The values of these variabilities are throughout higher than those found in areas of uniform populations. Thus we find for some of the provinces of Sweden[1] variabilities of less than ± 3. For Denmark, not divided into provinces, it is ± 3.29 for males, ± 3.26 for females,[2] which probably indicates a value of ± 3 or less for the separate districts.

A few other cases of increase of variability due to mixture have been described.[3] Among immigrants who come to America from various parts of Europe the variability of the cephalic index of children of one family is the greater, the greater the difference between the parents. This observation has been made among Jews and Italians. Only families are considered here in which father and mother belong to the same nationality. Evidently this may be explained in accordance with Mendelian principles by assuming the head-index to be determined by a number of unit characters, and each individual to represent a combination that may be expressed by the complex $a_1a, b_1b, c_1c \ldots ll, mm, nn \ldots$, in which group the characters without index express the unit characters common to father and mother, while those with index

[1] Gustaf Retzius and Carl M. Fürst, *Anthropologia Suecica*, pp. 90–91.

[2] Carl Burrau, Om Hovedets Formog Størrelse, *Meddelelser om Danmarks Antropologi*, I, p. 245.

[3] Franz Boas, *Changes in Bodily Form of Descendants of Immigrants (Final Report)*, pp. 77, 153–154.

express those that belong to father or mother alone. Then a massing of the values of the head-index around the racial type, with secondary maxima for the paternal and maternal values, may result.

We have also data for the width of face of half-bloods, the children of American Indian mothers and white fathers.[1] The observed distributions give the following widths of face:

Indians	149.8 ± 5.56	(3018 cases)
Half-bloods	145.8 ± 5.70	(594 cases)
Whites	(140.0) ± (5.20)	

Since the descent of the white fathers is not accurately known, we have introduced an approximate value. The increase of the variability of the half-bloods of the first generation is so small that we may say that the series, so far as its variability is concerned, seems to behave like a blend of two homozygous types. The increase in variability, due to the difference of distinct parental types that has been observed in intraracial marriages, does not appear here. Nevertheless the distributions observed among the half-bloods indicate a massing of observations near the Indian type and near the European type. In Mendelian terms this would have to be expressed in the same manner as the preceding case, namely, by the assumption that, in regard to width of face, both Indian and white are heterozygous, and contain certain elements in common, without appreciable dominance of any of the unit characters concerned.

The Mendelian formula, however, seems to involve an hypothesis that does not seem quite plausible, and we prefer to express the observed phenomena in another manner. Considering the observed similarities of members of fraternities and the similarities between individuals and their ancestors, we may say that the variability in fraternities is due to the varying intensity of transmission from individuals of the ancestral series, and that the intensity of hereditary transmission decreases with the remoteness of the ancestral relations. If we assume, then, that the hereditary feature is due

[1] Franz Boas, Zur Anthropologie der nordamerikanischen Indianer, *Verhandlungen der Berliner anthropologischen Gesellschaft*, 1895, pp. 404–408.

to the reappearance of ancestral types, and that there is always part of the paternal and part of the maternal line present, then the observed facts of segregation would be due to the presence of the same types of ancestors (or of the same ancestors) in the two lines. It will readily be seen that when we express the phenomena of heredity in these terms, the observations among Jews and among Indian half-bloods would be adequately covered. In the former case we should say that both father and mother have to a great extent the same ancestors which will reappear in the series; that, however, since both parents differ very much, similar differences may have occurred also among their more immediate ancestors. Therefore, on account of the stronger recurrence of the types of near ancestors, there will be a certain amount of massing at or near the paternal and maternal types.

In the case of the Indian half-bloods we should say that whenever characters of equidistant ancestral groups appear in the two lines, and neither is dominant, there will be a massing around the mixed type; whenever the characters of ancestral groups appear that are not equidistant in the two lines, the paternal or the maternal type will have the greater influence, according to which line is represented by the nearer, and therefore more potent, ancestors.

If we express the phenomena of inheritance in this manner, the observations showing the purity of the segregated recessive lines compel us to say that, when there has been a reversion to a certain ancestral trait in one line, then the later generations of ancestors in that line will have no influence on the descendants of the individual in question.

While the distribution of the variabilities of the cephalic index thus favors the theory of the permanence of the two fundamental types of northern and southern Italy throughout the period of their intermixture, the study of the variabilities found in cities indicates that environmental causes modify the values of the cephalic index. For many years all the large cities of Italy have had a considerable influx of a population born at great distances. This is true particularly of Rome, and the complex character of the descent of its population has been set forth by Livi. The relative

frequency of the native and foreign-born element of a number of large cities is contained in the following table, which has been extracted from the Census for 1901.

INHABITANTS ACCORDING TO PLACE OF BIRTH OF ELEVEN CITIES (HUNDREDS)

BORN IN	TORINO	GENOVA	MILANO	TREVISO	VENEZIA	BOLOGNA	FIRENZE	ROMA	NAPOLI	MESSINA	PALERMO
City	865	579	1027	100	508	406	542	1089	1921	615	1117
Rest of province	321	175	539	33	44	174	182	258	250	56	180
Piemonte	235	92	95	1	7	10	15	55	12	3	4
Liguria	19	11	17	—	5	3	5	13	6	1	5
Lombardia	51	48	441	2	14	12	12	38	16	3	7
Veneto	21	36	76	21	33	14	16	30	10	1	7
Emilia	21	59	84	3	12	64	28	77	13	2	3
Toscana	20	38	30	1	7	12	97	87	15	2	6
Marche	5	10	11	1	7	9	10	210	8	1	1
Umbria	2	3	5	—	1	2	7	110	6	—	1
Lazio	6	7	10	—	3	3	10	—	16	3	3
Abruzzi	4	10	6	—	3	4	5	184	40	1	3
Campania	8	19	18	1	6	5	15	114	264	10	12
Puglie	5	6	10	1	7	3	5	23	47	2	2
Basilicata	1	2	1	—	1	—	1	5	16	1	1
Calabria	2	7	3	—	2	1	2	15	39	17	5
Sicilia	12	18	13	3	7	3	7	31	44	24	187
Sardegna	5	6	3	—	1	1	2	7	3	1	2

Unfortunately the earlier census, which would express accurately the composition of the population for the parents of the men measured, is not available. Still it is quite certain that the influx of outsiders in cities like Genoa, Milan, and Rome must have continued for very long periods.

In the following table we give the values of the cephalic index and its variabilities for each of these eleven cities, and for the rest of the *circondario* in which they are situated. The values for the *circondari* were calculated from the data given in the full table for all the *mandamenti*, by excluding the *mandamento* representing the city, and by assuming again that all the *mandamenti* except the city had the same variabilities. The values for the cities were obtained directly from Livi's tables given on pp. 230–247. The table contains, furthermore, the theoretical averages which would

be obtained if all the values of the measurements according to the nativity of the people and their numbers as given in the census of 1901 were used, under the assumption that they would be preserved unchanged in the city.

	Cephalic Index			Variabilities			Number of Cases		Differences between Cephalic Index of City and Circondario without City	
	City			City						
	Theoretical Value	Observed Value	Circondario without City	Theoretical Value	Observed Value	Circondario without City	City	Circondario without City	Theoretical	Observed
Torino	85.5	85.6	86.3	±4.08	±3.85	±3.67	1391	3528	−0.8	−0.7
Venezia	83.7	83.8	85.7	±3.83	±3.62	±4.02	1101	1993	−2.0	−1.9
Treviso	85.1	85.4	85.1	±3.88	±3.77	±3.66	1098	2885	±0.0	+0.3
Bologna	84.2	83.9	84.7	±3.95	±3.84	±3.65	1380	2196	−0.5	−0.8
Milano	84.1	83.8	84.4	±3.61	±3.35	±3.32	1890	1660	−0.3	−0.6
Firenze	82.3	81.7	83.3	±4.30	±4.17	±4.15	1163	3625	−1.0	−1.6
Genova	82.7	82.1	82.7	±4.10	±3.77	±3.62	1552	1785	±0.0	−0.6
Napoli	82.4	82.6	82.6	±3.73	±3.66	±3.54	4623	920	−0.2	±0.0
Roma	81.4	79.9	80.4	±4.50	±4.04	±3.99	1384	1891	+1.0	−0.5
Messina	79.6	79.8	79.3	±3.56	±3.41	±3.43	1405	810	+0.3	+0.5
Palermo	79.6	79.5	79.0	±3.75	±3.64	±3.84	2524	1980	+0.6	+0.5

It will be noted that these theoretical values for the variabilities are very much larger than the observed values for the cities, and that the observed differences between the cities and the surrounding country for the variability of the cephalic index are trifling, in fact so trifling that a very large reduction of the foreign-born population would be necessary in order to make it possible to explain the changes without assuming coincident changes of types, due to city life. For Rome, for instance, it would be necessary to assume an immigration of less than one-twelfth of what it was in 1901 to obtain values at all comparable in regard to variability for the observed and the computed city values—provided the relative amount of influx has remained the same from all parts of the country. Furthermore, the values for the averages of the cephalic index in city and country contradict the results obtained from the variabilities alone. In short, considering the long-continued influx of foreigners into the cities, and the close agreement between the observed variabilities of city and of the country in which they are

situated, it seems necessary to assume that the head-index undergoes changes in the city. It is plausible that in Venice, which differs so much in environment from the surrounding country, the depression of the variability may be due to the strong influence of the environment.

It would seem, therefore, that the observations of the city-born population necessitate the assumption of a direct influence of city life on the cephalic type. This agrees with the conclusion reached from a study of the European immigrants in New York. It may be inferred from the New York observations that under the influence of city life the short-headed North Italians would become a little more long-headed, and the long-headed South Italians a little more short-headed. The theoretical values for averages obtained in Italy neither confirm nor contradict this assumption, while the theoretical values for variabilities that would be obtained under this assumption would show a much better agreement with the observed values than those resulting under the assumption of absolute stability of the component types.

The claim that the changes that do occur are due to natural selection cannot be proved, and does not seem to us favored by the American observations referred to before. The numerical values found for the Italian cities would also require an intensity of selection much greater than seems plausible. On the other hand, the manner of action and cause of a direct influence of city life on head-form remains so far entirely obscure.

Attention may also be called to the apparent massing of high variabilities in mountainous areas. This may perhaps be due to the fact that such areas have been for long periods places of refuge for individuals from different parts of the country who had to seek shelter from political or ecclesiastical persecution. However, the fact itself does not seem quite sufficiently established, and other explanations of the observed distribution seem possible.

COLUMBIA UNIVERSITY
NEW YORK CITY

RACIAL DIFFERENCES IN PALM AND SOLE CONFIGURATIONS

II.—Palm and Sole Prints of Liberian Natives

By HARRIS HAWTHORNE WILDER

I. Introduction

WHEN, about ten years ago, my early studies of human palm and sole prints began to reveal the great individual differences in the configuration of the palmar and plantar friction ridges, there naturally suggested itself the hope that differences, sufficiently distinctive to serve as racial criteria, could be found in the representatives of the different human races. My first observations along this line were made, naturally, upon American negroes, by the help of a set of prints collected at Providence, R. I., by Miss Inez Whipple (Mrs H. H. Wilder); soon after which came the unusual opportunity of studying prints of the Maya-Quichis, afforded me through the kindness of Dr A. M. Tozzer of Harvard University, who collected them during his first visit to Yucatan. The results of those studies, which, to a very limited extent, afforded an opportunity for the comparison of three distinct human varieties, were published in the *American Anthropologist* for April–June, 1904, and yielded fairly satisfactory results. The next work on this subject was that of Schlaginhaufen,[1] on the people of Farther India, and this was followed by a paper by Loth[2] on Poles from the vicinity of Warsaw. So far as I am able to learn, this completes the literature on the subject.

In my first paper, even with the small collection of prints at my disposal, certain rather definite results were obtained, such as the high percentage of occurrence of the thenar pattern in Maya

[1] Schlaginhaufen, O., Zur Morphologie der Palma und Planta der Vorderinder und Ceyloner, *Zeitschr. für Ethnologie*, Hefte 3–4, 1906.

[2] Loth, Edouard, Anthropologische Untersuchungen über das Hautleistensystem der Polen, *Zeitschr. für Morph. u. Anthropol.*, Bd. XIII, 1911.

hands, together with a low percentage of the hypothenar, when compared with the whites. The frequency of certain palmar formulæ in a given race, such as the formula 7.5.5.5 among the negroes, was also noted. It thus seemed that racial distinctions were certainly shown in the palm and sole markings, yet that the individual variation was so great in each race that only the averages of large numbers of individuals were of value as racial criteria. This view concerning the wide range of individual variations in all races became further corroborated as the St Louis Exposition furnished the opportunity of collecting prints from a number of human races not yet examined in this particular, and gave me the opportunity of studying and comparing both palm and sole prints of Ainus, Igorrotes, Patagonians, and Batua pigmies. These prints were taken for me by Mr Charles Hurlbut, and when added to my collection, which already contained the prints of negroes, Mayas, and Chinese, in addition to those of several hundred white Americans, presented material of sufficient breadth racially to allow of some generalization. Taken individually, there was nothing racially specific in either of these; not a palm or sole print but could be closely matched in its general features, except, of course, in the details of the ridges (Galton's *minutiæ*), by prints taken from Smith College students; yet, there still remained indications of definite racial differences in the percentage of occurrence of the several features, when compiled from a sufficiently large collection (at least 25 individuals).

There has just now come to my hand an unusually good opportunity for continuing these studies. Professor Frederick Starr, in his recent expedition to Liberia (1912), collected the palm and sole prints of 100 native soldiers, and, upon his return, presented the entire set to me. If, to appreciate this gift, one should take the complete set of prints of a single individual, and then multiply this effort by 100, he would estimate the work involved only in part, and should consider, in addition to this, the personal whims and caprices of each one of the hundred, and the task and skill required on the part of the collector in persuading them to submit to the process. Only thus may one appreciate the value of this gift, and

it is largely for him who has thus labored in my behalf that I am pleased, in presenting these data, that they show definite and positive results, of real value to anthropology.

The 100 individuals in this set are members of 13 different tribes, of which three are in Sierra Leone, the remaining ten Liberian. These, with their distribution among the hundred, which are numbered consecutively and are thus indicated in Tables I and II, are as follows:

Liberia

Buzi.....Nos. 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 18, 19, 20, 24, 25, 26, 29, 31, 33, 34, 36, 37, 38, 47, 52, 54, 59, 61, 62, 66, 67, 70, 74, 81, 85, 86, 87, 88, 90, 93, 97; = 43.
Mpessi (= Kpwesi).....Nos. 21, 72; = 2.
Bele (= Mbele).....Nos. 11, 22, 40, 84, 89, 94; = 6.
Mandingo.....Nos. 1, 4, 55, 58; = 4.
Bande (= Komende).....Nos. 23, 39, 45, 49, 60, 71, 75, 78, 79, 80, 91, 92, 95, 98; = 14.
Gola (= Gora).....Nos. 41, 65; = 2.
Bassa.....Nos. 17, 82; = 2.
Kisi.....Nos. 56, 57; = 2.
Grebo.....No. 83; = 1.
Lemba.....No. 27; = 1.

Sierra Leone

Mende.....Nos. 14, 30, 32, 35, 42, 43, 44, 46, 48, 50, 51; 53, 64, 68, 69, 73, 76, 77, 96, 99, 100, = 21.
Temne.....No. 63; = 1.
Susu.....No. 28; = 1.

II. Hands

The first cursory inspection of the prints of the hands showed an astonishing percentage of occurrence of the formula 7.5.5.5, with the slight variations 7.5.5.3 and 7.5.5.4, a condition previously observed in the prints of American negroes, and of so frequent an appearance that I had come to regard it as the "negro formula." In this type (fig. 30) line D makes an abrupt upward curve, almost from its origin, and terminates between the little and ring fingers in the position designated by the figure 7. By this course the line in question necessarily embraces, and assists in the formation of, a definite looped or whorled pattern, morphologically the fourth

TABLE I

HAND FORMULÆ OF LIBERIAN NATIVES (MALES) COLLECTED BY FREDERICK STARR, 1912

No.	Left		Right		No.	Left		Right	
1	**7.5.5.3**	th.o	−.−.5.5	o.o	51	−.−.5.5	th.o	−.−.−.−	o.o
2	**7.5.5.5**	o.o	**7.9.5.5**	o.o	52	**7.5.5.5**	o.o	**8.6.5.5**	o.o
3	7(5).5.5	−.o	**7.5.5.5**	th.h	53	T³.7.5.5	th.o	**10.9.6.5**	th.o
4	**7.5.5.5**	th.o	−.−.−.5	th.o	54	**7.5.5.3**	o.o	**7.5.5.5**	o.o
5	**7.5.5.3**	o.o	**7.5.5.3**	o.o	55	**7.5.5.5**	o.o	**7.5.5.5**	o.o
6	−.−.−.5	o.h	−.−.5.5	o.o	56	**7.5.5.3**	o.o	**7.5.5.5**	o.o
7	**7.5.5.4**	o.h	7.−.5.4	o.h	57	**7.5.5.3**	o.o	**7.7.5.5**	o.o
8	7.5.5.3	o.o	9.−.5.5	o.o	58	**7.5.5.4**	o.h	**11.8.7.5**	o.h
9	7.−.5.5	o.o	−.−.−.5	o.o	59	**7.5.5.5**	o.h	**7.5.5.5**	o.o′
10	**9.7.5.5**	o.o	**11.9.7.5**	o.o	60	−.−.−.5	th.o	11.9.7.5	th.o
11	**7.7.5.5**	th.o	**7.9.5.5**	th.o	61	7.−.5.3	o.o	**7.9.5.5**	o.o
12	9.8.5.5	th.o	11.9.7.5	th.h	62	**7.7.5.5**	o.o	**7.9.5.5**	o.o
13	**9.7.5.4**	o.h	**9.7.5.5**	o.o′	63	**7.5.5.5**	o′.o	−.−.5.5	o.o
14	**7.5.5.3**	o.o	−.−.5.5	o.o	64	**9.7.5.5**	o.o′	**9.8.5.5**	o.o′
15	7.−.−.5	o.h	11.−.−.5	o.h	65	**9.7.5.5**	o.o	11.9.−.5	o.h
16	**7.5.5.3**	o′.o	**8.6.5.5**	o.o	66	T³.8.5.5	o.o	7.9.5.5	o.o
17	9.8.5.5	o.o	−.−.−.−	o.o	67	T³.7.5.5	o.h	−.−.−.5	o.h
18	7.5.5.3	o.o	**7.5.5.3**	o.o	68	**7.5.5.5**	o.o	−.−.5.5	o.o
19	**9.8.7.5**	o.h	11.9.7.5	o.h	69	7.−.5.5	o.o	7.−.5.5	o.o
20	**9.7.5.5**	o.o	9.−.5.5	o.o	70	T³.7.5.5	o.o	9.7.5.5	o.o
21	**7.5.5.5**	o.o	−.−.5.5	o.o	71	**7.9.5.5**	th.o	T³.**9.5.5**	th.o
22	**7.5.5.3**	th.o	**8.6.5.5**	o.o	72	−.−.5.3	o.o	−.−.−.5	o.o
23	**9.7.5.5**	o.o	**11.9.7.5**	o.o	73	**7.5.5.3**	o′.o	−.−.−.5	o.o
24	**7.8.5.5**	o.o	−.−.−.−	o.o	74	**7.5.5.5**	o.o	−.−.−.4	o.h
25	−.−.5.5	o.o	−.−.5.5	o.o	75	**9.8.5.5**	o.o	**7.7.5.5**	o.o
26	**9.7.5.5**	o.o	−.−.−.5	o.o	76	−.−.−.−	o.o	−.−.−.5	o.o
27	**7.5.5.3**	th.o	**7.5.5.5**	o.h	77	7.−.5.5	th.h	**11.9.7.5**	o.o
28	**7.5.5.3**	o.o	**7.5.5.5**	o.o′	78	T³.7.5.3	o.o	11.9.7.5	o.o
29	T³.**9.5.5**	th.o	−.−.−.−	o.h	79	**7.5.5.3**	o.h	**7.5.5.5**	o.o
30	**7.5.5.3**	o.h	−.−.5.5	o.o	80	7.5.5.5	o.o	−.−.5.3	o.o
31	**9.7.5.5**	o.o	−.−.−.5	o.o	81	7.−.−.5	o.o	7.−.−.5	o.o
32	**7.5.5.5**	th.o	**7.5.5.5**	o.o	82	**7.7.5.5**	o.o	**11.9.7.5**	o.o
33	**7.5.5.5**	o.o	−.−.5.5	th.o	83	**7.5.5.3**	o.o	10.−.6.5	o.h
34	−.−.−.−	o.−	−.−.−.−	o.−	84	7.5.5.3	o.o	−.−.−.5	o.o
35	**7.7.5.5**	th.h	T³.**9.5.5**	th.h	85	−.−.5.4	o.h	7.−.−.5	o.h
36	T¹⁰.**9.6.5**	th.o	**7.9.5.5**	o.o	86	−.−.−.5	th.o	11.−.7.5	o.o
37	**11.8.7.5**	o.o	**11.8.7.5**	o.o	87	7.−.5.5	o.o	**9.9.5.5**	o.o
38	**7.5.5.5**	o.o	−.−.−.−	o.o	88	**7.5.5.5**	o.o	**7.5.5.5**	o.o
39	9.−.5.5	th.h	−.−.5.5	o.o	89	**7.5.5.3**	o.o	−.−.5.5	o.o
40	**7.9.5.5**	th.o	−.−.5.5	o.h	90	**7.5.5.3**	o.o	−.−.5.3	o.o
41	**7.5.5.5**	o.o	−.−.5.5	o.h	91	**7.5.5.3**	o.o	−.−.5.5	o.o
42	**7.5.5.5**	o.o′	−.−.−.5	o.o	92	7.−.5.5	o.o	−.−.−.5	o.o
43	−.−.5.5	o.o	11.−.−.5	o.o	93	−.−.5.5	th.o	−.−.5.5	o.o
44	−.−.5.5	o.o′	−.−.−.5	o.o	94	−.−.−.3	o.o′	−.−.−.5	o.h
45	**7.5.5.5**	o.o′	**7.5.5.5**	o.o	95	**7.5.5.5**	o.o	−.−.5.5	o.o
46	T³.−.5.3	o.o	−.−.5.5	o.o	96	7.−.5.3	o.o′	−.−.5.5	o.o
47	−.5.5.5	th.o	−.−.5.5	th.o	97	**7.5.5.5**	o.o	7.−.5.5	o.o
48	**9.7.5.5**	o.o	**11.9.7.5**	o.o	98	7.−.5.5	o.o	**7.5.5.3**	o.o
49	7.−.5.5	o.h	−.−.−.−	o.o	99	**7.5.5.3**	o.o	7.−.−.3	o.o
50	11.9.7.5	o.o	11.9.7.5	o.o	100	−.−.5.4	o.h	−.−.5.5	o.o

Only the formulæ in bold-faced type are complete and beyond doubt correct, and the conclusions given in this paper are based on these alone. The others, 99 in num-

interdigital of Miss Whipple.[1] The three other main lines open upon the outer margin, sometimes with line A terminating along the upper two-thirds of this margin, position 5, or within the lower, or proximal third, position 3. Occasionally, too, line A becomes involved in a hypothenar pattern, and is thus prevented from attaining the margin at all; position 4. Thus these three closely related formulæ are practically the same, the sole difference being in the course of line A. The finding of this "negro formula" so common in the Liberian prints, after having already established its frequency among North American negroes, is of especial significance, since the source of these new prints is geographically so near the place of origin of the majority of the North American slaves.

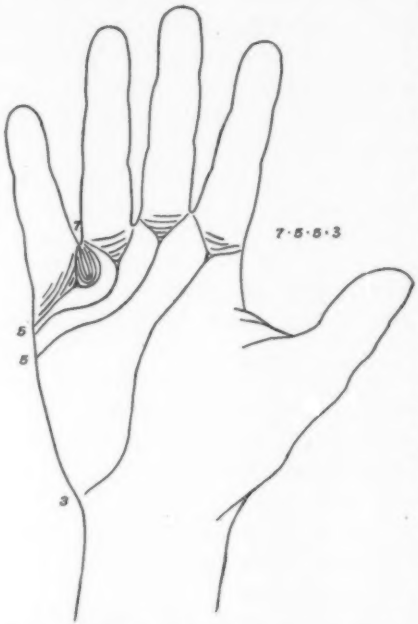

FIG. 30.—Typical print, showing the *negro formula*, 7·5·5·3. *No. 5, Busi tribe.*

The next step in the examination consisted naturally of making

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ber, are either defective or, when complete, are more or less uncertain, owing to the condition of the print. The two last figures, those following the palmar formula, indicate the presence of a thenar pattern by *th*, an hypothenar by *h*, and the absence of a pattern by an *o*. An accented *o*, thus, *o'*, denotes a rudiment of the pattern in question.

[1] Whipple, Inez L., The Ventral Surface of the Mammalian Chiridium with special reference to the conditions found in Man, *Zeitschr. für Morphol. u. Anthropol.*, Bd. VII, 1904.

a definite formulation of the individual palms, and presenting the results in the form of a table (Table I). Unfortunately many of the prints were deficient in certain essential areas, especially along the bases of the fingers where the triradii of origin of the main lines are situated, and thus of the entire set I could be positive of the complete formulæ of but 64 left hands and 37 rights, 101 in all. These appear in the table in bold-faced type; in the other cases only the parts which could be definitely known are given.

As a basis for comparison 100 sets of hands from native whites from the United States were formulated in the same way and placed in a second table (Table II), but here, as I could select these from a collection of more than 400, it was possible to take only those that could be wholly formulated, and there are thus 200 complete formulæ, 100 from each side.[1] Although there has yet been found absolutely no difference between the sexes in respect to palm and sole marking, it may be noted that the Liberian prints were all males, and the prints of whites from my collection all females.

A mere glance at these two tables (I and II) will suffice to show certain distinct and well-marked differences, such as (1) that the great preponderance of the "negro formula" in the Liberians is a fact, and (2) that the amount of individual variation, as shown in the number of different formulæ represented in each set, is far greater in the whites than in the Liberians.

[1] These formulæ follow the method first proposed by me in a popular article in 1903 (*Pop. Sci. Monthly*, Sept.) and afterward brought to general use. It was explained in the paper just quoted, and again more thoroughly in 1904, in the paper in the *American Anthropologist* on racial differences. As in those papers, I still use the numeral 8 for cases of total suppression of line c, as well as for those in which there is a very short line that ends in a loop, although for the first of these cases Loth has proposed the sign x, which may prove convenient. This condition Loth considers a Polish character, but I have found this, as well as the very short line, in many races. These cases represent respectively the "arch" and the "tented arch" of Galton, and simply show the two final stages in the degeneracy of the pattern as shown by Miss Whipple (1904, loc. cit., fig. 44, p. 345, c. II, and D. III). These figures are cited by Loth, and the two conditions are figured by him in his Tafel IV, figs. 1 and 2. I am sorry that I have nowhere explained these cases, or my expressions for them in the written formulæ, for the omission has misled Loth; but the frequent use of the numeral 8 as the position of line c, as seen in my former papers, indicates the frequency of these conditions.

TABLE II

HAND FORMULÆ OF WHITE INHABITANTS OF THE UNITED STATES (FEMALES) COLLECTED BY HARRIS HAWTHORNE WILDER

No.	Left		Right		No.	Left		Right	
1	8.6.5.1	0.0	9.9.5.5	0.0	51	T11.9.7.5	0.h	11.10.8.5	0.h
2	10.7.6.2	0.0	11.9.7.5	0.0	52	11.8.7.5	0.h	11.9.7.5	0.0
3	9.7.5.3	0.0	10.9.6.4	0.h	53	9.8.5.5	th.0	10.7.6.5	0.0
4	10.9.6.2	0.0	11.9.7.2	0.0	54	T9.8.5.5	th.0	11.9.7.5	0′.0
5	11.10.8.5	0.h	11.10.8.5	0.h	55	10.7.8.3	0.0	9.7.5.5	0.0
6	10.9.6.5	0.h	10.7.6.5	0.0′	56	10.8.6.5	0.h	11.9.7.3	0.h
7	8.6.5.3	0.0	9.7.5.4	0.h	57	7.5.5.3	0.0	9.8.5.3	0.0
8	7.5.5.5	th.0	9.7.5.5	0′.0	58	11.7.7.5	0.0	11.9.7.5	0.0
9	10.7.6.3	0.0	11.9.7.5	0.0	59	11.8.7.5	0′.0	11.9.7.3	0.0
10	11.7.7.3	0.0	9.7.5.5	0.0	60	11.9.7.5	0.0	11.8.7.3	0.0
11	11.9.7.4	th.h	11.9.7.5	th.h	61	10.8.6.5	0.h	10.7.6.4	0.h
12	11.7.7.4	0.h	10.7.6.5	0.0	62	9.8.5.5	th.0	10.7.6.5	0′.0
13	9.8.5.5	th.0	11.10.8.5	0.0	63	9.7.5.3	0.h	11.9.7.4	0′.h
14	9.7.5.5	0.0	9.8.5.5	0.h	64	11.9.7.5	th.0′	11.9.7.5	th.0
15	9.7.7.5	0.0	11.8.7.5	0.0	65	11.8.7.5	0.0	11.9.7.5	0.0
16	9.7.7.5	th.0	11.9.7.5	0′.0	66	11.8.7.5	0.0	11.8.7.5	0.0
17	10.9.6.2	0.h	10.9.6.5	0.0	67	8.6.5.5	0.0	9.7.5.5	0.0
18	7.7.5.5	0.0	7.5.5.5	0.0	68	11.9.7.5	0.0	11.9.7.5	0.0
19	10.7.6.5	0.0	11.9.7.5	0.0	69	11.8.7.5	th.0	11.9.7.5	th.h
20	7.5.5.3	0.0	9.7.5.5	0.0	70	9.7.5.3	0.0	9.7.5.4	0.h
21	10.7.6.5	0′.0	10.7.6.5	0.0	71	11.9.7.5	th.h	11.9.7.5	0.h
22	9.7.5.5	0.h	11.9.7.5	0.h	72	10.7.6.5	0.0	11.9.7.5	0.h
23	11.9.7.5	th.0	11.10.8.5	th.0	73	9.7.5.3	0.0	9.7.5.5	0.h
24	7.5.5.4	0.h	11.7.7.5	0.0	74	11.9.7 5	0.0	11.9.7.5	0.h
25	7.5.5.2	0.h	8.6.5.5	0.h	75	11.9.7.5	th.0	11.9.7.5	0.0
26	8.6.5.3	0.0	7.5.5.3	0.0	76	10.9.6.3	0.0	9.7.5.5	0.0
27	9.7.5.4	0.h	9.7.5.4	0.h	77	9.9.5.5	0.0	10.8.6.5	0.0
28	7.5.5.4	0.h	7.5.5.4	0.h	78	9.7.7.5	0.h	11.9.7.5	0.h
29	9.7.5.5	0.0	9.7.5.5	0.0	79	9.7.5.3	0.h	10.9.6.5	0.h
30	9.7.7.4	0.h	10.7.6.5	0.0	80	11.8.7.5	th.0	11.9.7.5	th.0
31	10.7.6.2	0.h	11.9.7.4	0.h	81	10.7.6.5	0.0	7.5.5.5	0.0
32	7.5.5.3	0.0′	9.7.5.2	0.h	82	7.5.5.3	0.h	9.7.5.3	0.h
33	10.7.6.2	0′.h	9.7.5.3	0.0	83	11.9.7.5	0.0	11.9.7.5	0.0
34	T9.8.7.5	th.0	T11.10.8.5	0.0	84	11.7.7.5	0.h	11.7.7.5	0.h
35	9.7.5.5	0.0	9.7.5.5	0.0	85	11.9.7.5	0.0	11.9.7.5	0.0
36	11.7.7.3	0.h	11.7.7.5	0.0	86	10.9.6.5	0.h	10.9.6.5	0.0
37	11.9.7.5	0.h	11.9.7.5	0.0′	87	9.7.5.5	0.0	10.9.6.5	0.0
38	8.6.5.3	0.0′	8.6.5.4	0.h	88	9.7.5.5	th.0	7.5.5.5	0.h
39	7.8.5.3	0.h	7.9.5.4	0.h	89	11.9.7.5	0.0	T11.9.7.5	0.0
40	9.8.7.5	0.h	11.9.7.5	0.0	90	9.9.5.5	0.h	11.9.7.5	0.h
41	9.7.5.3	0.0	7.5.5.5	0.h	91	7.9.5.4	0.h	11.10.8.5	0.0
42	11.8.7.5	0.0	10.9.6.5	0.0	92	7.5.5.5	0′.0	11.9.7.5	0.0
43	11.7.7.5	0.0	11.9.7.5	0.h	93	7.5.5.5	0.0	7.5.5.5	0.0
44	9.7.5.2	0.h	9.7.5.5	0.h	94	T11.9.7.5	0.0	7.9.5.5	0.0
45	11.9.7.5	th.0	11.8.7.5	th.0	95	11.9.7.5	0′.0	11.9.7.5	0.0
46	7.5.3.2	0.0	8.6.5.3	0.0	96	10.9.6.1	0.0	9.7.5.5	0.0
47	9.9.5.5	0′.0	9.7.5.5	0.0	97	9.7.5.3	0.0	11.7.7.3	0.0
48	7.5.5.3	0.0	8.6.5.5	0.0	98	11.8.7.5	0.0	11.10.8.5	0.0
49	10.9.6.3	0.h	9.7.5.5	0.h	99	11.7.7.5	0.h	11.9.7.5	0.0
50	7.5.5.2	0.0′	7.5.5.4	0.h	100	9.9.5.5	0.0	11.9.7.3	0.0

As this table has been made up from selected prints, in which all the designations are clear and definite, the use of bold-faced type, as in Table I, is not necessary.

To study these and other points in detail a table may be compiled, as in Table III, in which all the formulæ represented by both sets are collected and placed in numerical order, and followed

TABLE III

OCCURRENCE OF FORMULÆ IN THE TWO SETS OF PALM PRINTS

Formulæ	Whites			Negroes		
	Left	Right	Total	Left	Right	Total
7.5.3.2	1	—	1	—	—	—
7.5.5.2	2	—	2	—	—	—
7.5.5.3	5	1	6	18	3	21
7.5.5.4	2	2	4	2	—	2
7.5.5.5	3	5	8	18	11	29
7.7.5.5	1	—	1	4	2	6
7.8.5.5	1	—	1	1	—	1
7.9.5.4	1	1	2	—	—	—
7.9.5.5	—	1	1	2	5	7
8.6.5.1	1	—	1	—	—	—
8.6.5.3	3	1	4	—	—	—
8.6.5.4	—	1	1	—	—	—
8.6.5.5	1	2	3	—	3	3
9.7.5.2	1	1	2	—	—	—
9.7.5.3	7	2	9	1	—	1
9.7.5.4	1	3	4	1	—	1
9.7.5.5	6	13	19	11	1	12
9.7.7.4	1	—	1	—	—	—
9.7.7.5	3	—	3	—	—	—
9.8.5.3	—	1	1	—	—	—
9.8.5.5	4	1	5	2	—	2
9.8.7.5	2	—	2	1	1	2
9.9.5.5	4	1	5	1	3	4
10.7.6.2	3	—	3	—	—	—
10.7.6.3	1	—	1	—	—	—
10.7.6.4	—	1	1	—	—	—
10.7.6.5	4	6	10	—	—	—
10.7.8.3	1	—	1	—	—	—
10.8.6.5	2	1	3	—	—	—
10.9.6.1	1	—	1	—	—	—
10.9.6.2	2	—	2	—	—	—
10.9.6.3	2	—	2	—	—	—
10.9.6.4	—	1	1	—	—	—
10.9.6.5	2	5	7	1	1	2
11.7.7.3	2	1	3	—	—	—
11.7.7.4	1	—	1	—	—	—
11.7.7.5	4	3	7	—	—	—
11.8.7.3	—	1	1	—	—	—
11.8.7.5	8	3	11	1	2	3
11.9.7.2	—	1	1	—	—	—
11.9.7.3	—	3	3	—	—	—
11.9.7.4	1	2	3	—	—	—
11.9.7.5	15	29	44	—	5	5
11.10.8.5	1	7	8	—	—	—
Totals	100	100	200	64	37	101

each by the number of times it occurs in the two sets. In the whites, with exactly 200 hands, the percentage of occurrence of each formula is easily obtained by dividing the third, or "total," column by 2; in the negroes the corresponding third column gives practically the percentage without division, since the number of prints used happened to be 101 in number.

By the help of this table we are now ready to draw the following definite conclusions:

I. In the negro hands 52 per cent. show the typical "negro formula," 7.5.5.3–5. In the white hands this appears in only 10 per cent.

In the white hands 63 per cent. show the formula 11.9.7.2–5 (with the slight variation of 8 for 9 in the second place), a formula which may be called provisionally the "white formula." In the negro hands this appears in only 8 per cent.

II. The white hands exhibit no fewer than 44 different formulæ, while the negro hands show but 16. It must be admitted that the negro hands used here were but 101 in number against 200 of the whites, yet this would hardly account for the extraordinary difference. Furthermore, the 99 remaining formulæ, rejected because incomplete or indistinct, seem, so far as indicated, to be about like the others.

III. If we compare the first figure of the formulæ, which expresses the course of line D, *it is found that in the negro hands this line terminates at 7, that is, in the interval between the little and ring fingers, in no less than 66 per cent. of the cases, practically two-thirds; while in the 200 white hands this course is seen in only 26 cases, or 13 per cent. This is shown in another way by noting that in Table III nearly all of the negro hands occur in the first third of the list, while the majority of the white hands are found in the last third. That these represent fundamental morphological differences, and*

TABLE IV

PERCENTAGES OF THE VARIOUS TERMINAL POSITIONS OF LINE D

Terminal position of D	7	8	9	10	11	Total
Negroes	66	3	22	2	8	101[1]
Whites	13	4.3	25.5	16	41	100

[1] Here, as elsewhere, the number of cases out of a total of 101 is employed instead of the exact percentage, as the two are practically the same.

undoubtedly also physiological ones, i. e., difference in the use of the hands, in the two races considered, is evident.

This difference in the course of line D *may be shown in still another way, and perhaps more strikingly, by tabulating the terminal position of the line in question in all the cases here considered.* (Table IV.)

IV. In the negro hands a fourth interdigital pattern is present, not only in the 66 cases where line D *terminates at position 7, but in 21 other cases out of the 101, that is, in 87 per cent. In the white hands this pattern is not especially common, 55 cases in 200, or 27.5 per cent. This condition will be seen to be mainly a concomitant of the other features, closely correlated, for instance, with position 7 for line* D, *and is thus of minor importance as a distinctive character, yet serving to emphasize the differences previously noted.*

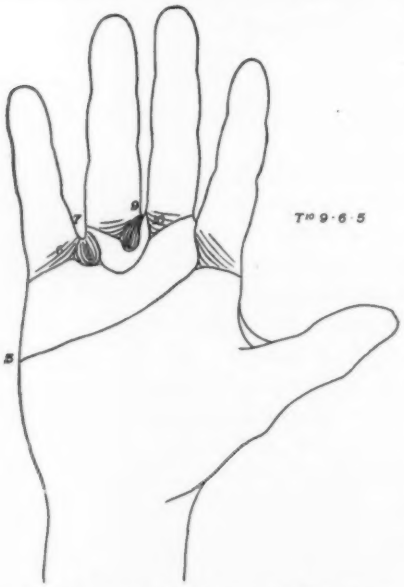

FIG. 31.—Print with a lower triradius present, and intercepting line D. This line is continued as the inner lower radiant of the triradius, and curves upward to position 10, cutting off line C from the outer margin. *No. 36, Buzi tribe.*

In counting the fourth interdigital pattern great care must be taken not to confound it with the "false pattern" (Miss Whipple) often found in the interval between the triradii of origin of lines C and D, and caused by the bending back of line C in a short curve to its ulnar rather than to its more usual radial side, in order to get out of the way either of the D line, when it reaches to termination 9 or beyond, or of a similar curve formed by the radiants of a lower triradius [cf. figs. 31 and 32]. The false pattern seen in the latter of

the two figures occupies nearly the same position as the true fourth interdigital, but the two often occur simultaneously (figs. 32 and 33) and are thus distinct. Occasionally, too, the true fourth interdigital has disappeared, and in such a case a large false pattern may greatly resemble the other. Various stages in this gradual reduction of the fourth interdigital pattern may be followed through figures 33, 32, and 34, in the order given, and in the last is seen a curious forking of the ridges which represents the last vestige of the pattern.

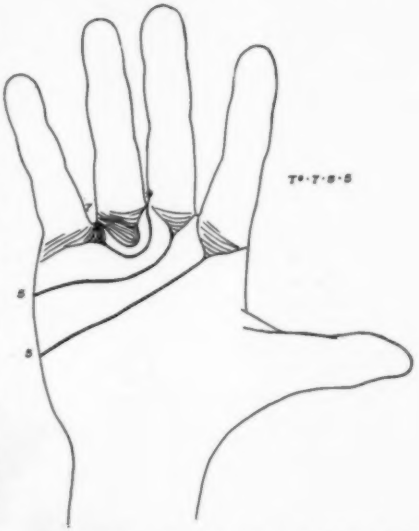

FIG. 32.—Case similar to fig. 31, but with line C curving around to the outer instead of the more normal inner side, forming a false pattern. *No. 64, Mende tribe.*

The lower triradius, too, which in the negro hands, in correlationwith the fourth interdigital pattern, is of especially frequent occurrence, proves often a disturbing element, and is illustrated in some of its phases in the figures. Often, as in figure 31, it intercepts line D directly, so that the latter may be said to terminate in it. It is also possible to consider line D as continuing along one of the other radiants of the triradius, in this case either continued along the most natural direction to 10, or curving sharply up to position 7. Here in all such cases the practice has been to indicate the terminus of line D by a capital T, indicating the direct collision with the triradius, and to indicate further the continuance on the other side of the triradius by an exponent, here T^{10}. In figure 32 the same relation to the triradius, but with a different ultimate termination, gives the figure T^{9}. It is plain

that these two cases, and others like them, might with an almost equal right be designated with simply the number 7; but while this is usually obvious, as in figure 31, in the rarer case shown in figure 32, the small size of the pattern and the direct continuance of the radiant to terminus 9 renders this latter the more obvious designation to use. In the conclusions given above, these cases with an interrupting triradius have not been included in the formulæ beginning with a 7, but if they had they might have made a slight difference in the percentages of the positions of line D.

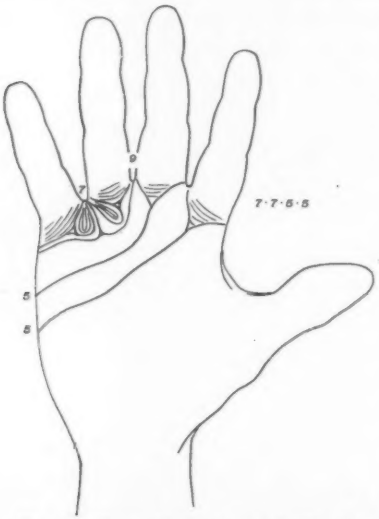

FIG. 33.—Case with the lower triradius below the D line, and so enclosing both this and line C that they make short curves and terminate interdigitally. The pattern formed by line C is false, as in fig. 32. *No. 35, Mende tribe.*

In the 200 white hands are found 16 thenar patterns in the lefts and 6 in the rights, 22 in all, which give for this pattern a percentage of occurrence of 11 per cent. In the same number of negro hands, for these portions were decipherable in practically all the prints, there are 20 lefts and 10 rights, or 30 in all, which give a percentage of 15 per cent. In this feature, then, there is but a slight advantage in favor of the negro, but it is to be noted that in this set of 100 whites the percentage is considerably larger than in the one previously investigated.

As for hypothenar patterns the whites give 33 lefts and 34 rights, or 33.5 per cent., while in the negroes the corresponding figures are 16 and 17, or 16.5 per cent. These figures show, then, a real racial difference in the occurrence of this pattern, and corroborate the feeling expressed tentatively in my previous paper that the

hypothenar was especially characteristic of the whites. It may also be noted that in each of the two cases the occurrence of this pattern was the same on the two sides, while in each the thenar occurs at least twice as frequently upon left hands.

Both hands of No. 71, a Bele negro, present strongly developed thenars, of a more primitive type than any I have ever seen. They consist of large whorls, with a slight tendency to form spirals, occupying the larger part of the thenar eminence. The one on the right hand (fig. 35), in which the print is more complete, shows also, above the thenar, the first interdigital pattern generally associated with the thenar, and between the two are the two triradii commonly found. The large triradius below the thenar pattern is seldom as definite as here, but has more usually disappeared within the core of the pattern, converting the whole into an open loop. Here its completeness, together with its distance from the center of the pattern, define for the latter a large area, within which the ridges become disposed in the typical primitive form of a concentric whorl. How primitive this case really is may be seen by comparing it with figure 36, which exhibits an extremely primitive thenar of the kind hitherto known.

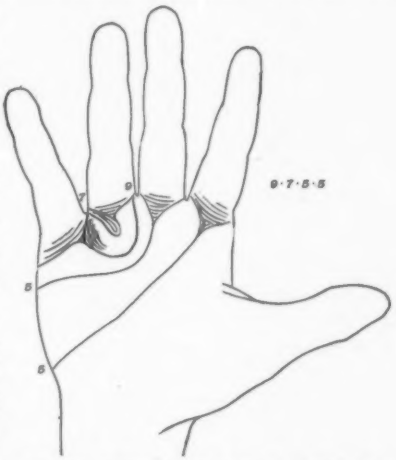

FIG. 34.—Case similar to fig. 32, but with the true fourth interdigital patterns reduced to a few vestiges. *No. 63, Golah tribe.*

A cursory examination of the finger-tips (apical patterns) show a considerable proportion of very large patterns, either loops or whorls, in which so many ridges enter into the formation of the pattern that the two triradii characteristic of these patterns are pushed very far around the sides of the finger and may in

some cases have been extralimital, that is, beyond the limits of the friction skin. Thus in the case of a loop the appearance is given at first glance of a finger ball covered with an unbroken series of longitudinal lines, somewhat resembling the typical lemurine condition, but of course in reality not so. The whorl, on the other hand, is really simian, and when of oval form and covering the whole of the finger, presents a true primitive condition. A few of the best of these, illustrating both principles, are given here for general study (fig. 37), but no detailed investigation of these parts has been attempted.

FIG. 35.—Primitive thenar pattern, combined with the first interdigital. *No. 71, Bande tribe.*

III. FEET

The sole prints have as yet been submitted to merely a cursory examination, in which a few points only have been noted. Naturally the first attention was directed to the hallucal pattern, which is by far the most conspicuous feature and is very variable. Everywhere the two commonest main types, or classes, are those previously designated as types A and W, the one a

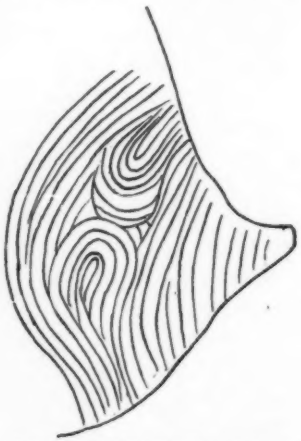

FIG. 36.—Well-developed thenar pattern, combined with the first interdigital, from a white woman from the United States. This represents about the highest development of the thenar pattern yet reported from the white race. For comparison with fig. 35. H. H. W. Coll., No. 8.

simple loop opening upward between hallux and second toe, the other a whorl or a complex figure closely approaching it. Aside from these are the loop opening to the inner margin, type B, and the large spiral, denoted as S, together with certain forms hard to define, and expressed by such combinations as AB, etc.

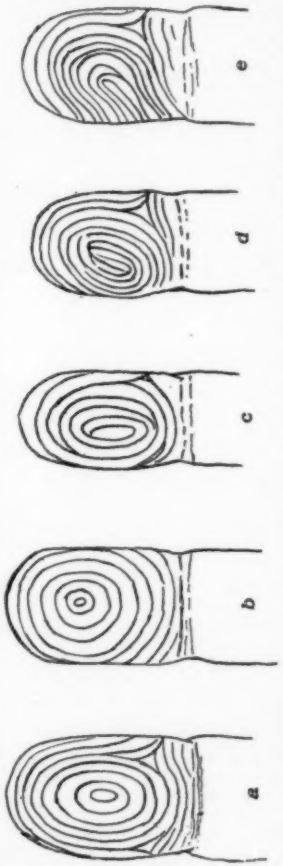

FIG. 37.—A number of primitive apical patterns from the Liberian prints. (*a*) Right annularis of No. 40, *Bele*. (*b*) Left medius of No. 43, *Mende*. (*c*) Left annularis of No. 75, *Bande*. (*d*) Left minimus of No. 45, *Bande*. (*e*) Left minimus of No. 64, *Mende*.

The A-type of hallucal pattern, especially when joined with a sole otherwise patternless, and covered by ridges that run across the entire ball obliquely from this base of the lesser digits toward the inner side below the ball, seems especially characteristic of the white race. On the other hand, the whorl, combined with several other well-defined patterns, especially the outer one (fourth interdigital), and with a large and pronounced lower triradius at about the meeting place of the three outer interdigital patterns, seems to be more common among primitive races. The frequency of this type of sole among the Maya has been already noted, and is figured in my previous paper on this subject.[1] While, now, the presence of either the A-type or the W-type in a given foot does not necessarily indicate that the

[1] Loc. cit., 1904, fig. 5, p. 267.

foot is typical throughout, the A without patterns, and the W well supplied, such is usually the case, and thus a comparison of the percentage of occurrence of the two in whites and Liberians will be of interest. For comparison I have used the sole prints of 84 white individuals from the United States (168 separate soles); of the Liberians I have the complete set (100 individuals, 200 sole prints), as all are sufficiently legible for use.

In the whites the A-type of hallucal pattern appears in 39 lefts and 46 rights, in all 85, which gives a percentage of 50.5. In the Liberians the corresponding figures are but 21, 27, and 48, or 24 per cent. less than half that of the whites. On the other hand the W-type occurs in the white feet in only 32 lefts and 26 rights, or 58 in all, giving a percentage of 34.5; while in the blacks the figures are 54 for each side, or 108 in all; that is, 54 per cent. This, then, is a further corroboration of the previous statements concerning these types, that type A is especially characteristic of the white race, and the type W is more frequent elsewhere.

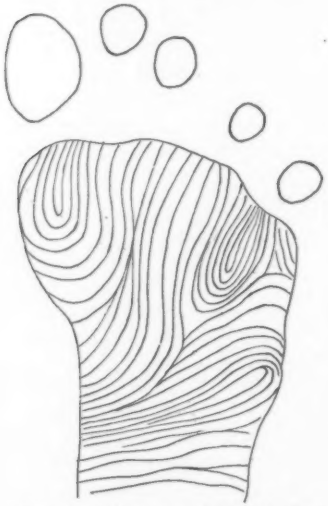

FIG. 38.—Right sole of No. 88, Buzi, with suggestions of simian characteristics.

In hallucal patterns other than these two frequent types the blacks considerably surpass the whites, showing 22 per cent. of such as against 14.9 per cent. Of these forms the B-type appears in excess in both races, as is natural, while, again in both races, certain individual soles are occasionally found which are difficult to explain, and hence to classify.[1] Thus, the hallucal pattern

[1] Even in the small number of cases then at my disposal I had noted these variations of the hallucal pattern in the negro in my paper of 1904, and there figured two of them (pl. XI), one a case in which the pattern had practically disappeared, the other the B-type. These two are frequent and noticeable in the Liberians.

may entirely disappear, and the surface be covered by a course of nearly parallel ridges, usually with a single triradius in some part of it to mark the former condition.

FIG. 39.—Right sole of No. 85, Buzi, showing a large S-shaped pattern of unknown morphological significance in the middle third.

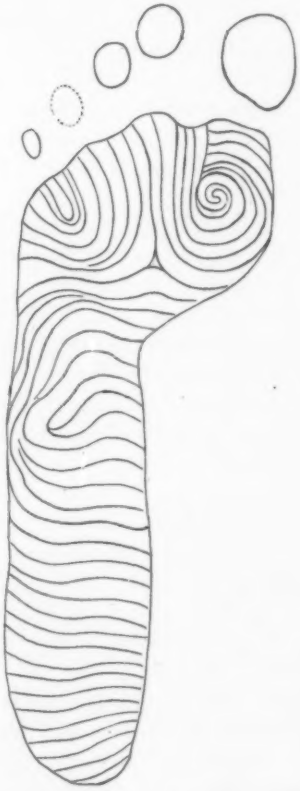

FIG. 40.—Left sole of the same, with a similar pattern, although less complicated.

In general it may be said that among the Liberian set occur several very unusual prints, that give unexpected arrangements, not previously noted anywhere. Two or three, for example, exhibit an almost longitudinal course of the ridges over an extent equal to at least the distal third of the entire sole, like the one shown in figure 38; yet a similar condition has been noted in whites, the main difference being in the proportionate length of the area thus occupied, a character hard to determine. This character is, however, an extremely important one morphologically, since a similar but more extensive longitudinal course of the ridges is the rule among the large simians, probably to counteract the tendency of the foot to slip sideways when applied to the side of a horizontally placed limb.

Altogether the most singular pair of feet belong to a Buzi by the name of Kasugua, No. 85 of the Starr collection, and, for their very unlikeness to anything I have ever seen, are reproduced here (figs. 39 and 40). In this an enormous loop, or more probably, as better indicated in the right foot, a widely extended S, occupies the entire middle third of the foot. Whether this may prove to be a true thenar, usually suppressed, or whether it may be eventually brought into line with the single hypothenar loop, which is of frequent occurrence everywhere, especially in the whites, or perhaps with the rare calcar loop noted in a few whites (Miss Whipple, 1904, loc. cit., pl. VI), cannot yet be even speculated upon; but these ideas may here be suggested, while hoping and waiting for points that may some day furnish a clue to the matter.

In this connection is it too much to hope for the discovery of prints, both of hands and feet, in the clay of European caverns which have been the site of prehistoric activity? Neolithic fingerprints on shards have often been reported, although, I think, never studied by an expert on the subject, and very recently there has been mention of the discovery of footprints in the clay in association with paleolithic wall paintings of the Pyrenees and adjacent territories (*L'Anthropologie*). As we have now many careful studies of the palm and sole prints of our large anthropoids, and are continually increasing our knowledge of the subject in the

case of numerous human types, even a slight indication of such a print, made by paleolithic man, might give invaluable data concerning the evolution of this portion of our anatomy.

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A PRELIMINARY SKETCH OF LENÁPE CULTURE

By M. R. HARRINGTON

IN concluding a previous article in this journal, setting forth a few facts gathered from the Delaware or Lenápe Indians now living in Canada,[1] I called attention to the possibility of obtaining further information from their brethren in Oklahoma. The first opportunity came in 1908 in connection with my work for the University of Pennsylvania Museum Expedition, supported by George G. Heye, Esq., after which for several years I was enabled to make numerous visits to the Oklahoma bands. It is proposed to publish the complete results as one of the Anthropological Publications of the University of Pennsylvania Museum, but in the meantime a brief sketch of the material at hand, derived almost entirely from Indian sources, may prove of interest.

The Delaware Indians, or, as they call themselves, the Lenápe, are variously regarded as a tribe, composed of three bands, or as a confederacy, embracing three closely related tribes. For the present, at least, as being nearest in line with the known facts, I have adopted the latter view. Most writers agree that, at the time of the settlement of New Jersey and Pennsylvania, there were three great geographical divisions or tribes of the Delaware people: the Unámi, or Delawares proper; the Unalachtigo (now pronounced Unala''tko), and the Mínsī, or Munceys: a classification which has been verified by several of the older Lenápe in Canada. These Indians informed me that the people who went "west to Kansas" were mainly Unámi, with a few Mínsī; while the band brought to Canada by the Moravian missionaries and settled on Thames river were also largely of Unámi extraction. The Mínsī coming to Canada settled farther up the Thames, while another group, mainly Unámi, became known as the Delawares of Grand river.

[1] Vestiges of Material Culture among the Canadian Delawares, *American Anthropologist*, N. S., vol. 10, no. 3, 1908.

I have thus far been unable to locate the survivors of the Unala''tko —they seem to have lost their tribal identity. Yet the names of two other tribes, the One''tko, or Nanticoke, and the Mahīkanī, or Mohican, are not only still remembered as those of affiliated peoples, but their descendants are pointed out even to this day.

The geographical divisions of the Lenápe today, with population figures taken from the *Handbook of American Indians*, are approximately as follows:

1. Delawares of Caney River, near Dewey, Oklahoma. Unámi dialect.... 870
2. Delawares of Washita River, near Anadarko, Oklahoma. Dialect slightly different from above, but not yet identified 95
3. Delawares of Grand River, near Hagersville, Ontario. Mínsī dialect; some Unámi remembered 150
4. Moravians of the Thames, near Bothwell, Ontario. Mínsī dialect, but some can speak Unámi 347
5. Munceys of the Thames, near Munccy, Ontario. Mínsī dialect..... 122
6. "Munsee" with Stockbridge in Wisconsin 260
7. "Munsee" with Chippewa in Kansas 45

Total population, about 1,889

While I have visited all the above groups except the last two, the information here presented was derived mainly from the Delawares of Caney river and the Munceys of the Thames, which may be considered successors respectively of the old Unámi and Mínsī.

Social and Political Organization.—The Unámi, as represented by the Delawares of Caney River, are divided into three totemic groups or phratries, each named after an animal—Wolf, Turtle, and Turkey. The widely accepted view that these groups represented the three geographical divisions, Mínsī, Unámi, and Unala''tko, finds no confirmation among the Indians today, who assert that they have always had the three divisions. Nor is there any special attempt to connect the persons known to be of Mínsī descent with the Wolf totem, which might well be the case had the Wolf been the exclusive totem of the Mínsī. In the same way the surviving Mínsī in Canada, having two such groups, the Wolf and the Turkey, claim that they never heard of the time when the

Wolf was the sole totem of their people. It is said, however, that in former times the phratries occupied different villages.

Attributes of the animals in question are used as names for the phratries instead of the colloquial names of the creatures themselves. Thus the Wolf phratry is called *Tûk'sīt*, or Round-foot; the Turkey, *Pelē'*, or Don't Chew, while the Turtle is called *Po'kaun'go*, said to mean "Crawling" or "Dragging along."

Each of the three phratries is composed of a number of smaller groups or clans, the names of which are not totemic. In the Turtle the following clans were remembered by my informants: *O kē hó kī*, Bark Country; *Ē ko on gwē ta*, Under the Hill; *Ol ha ka mī' ka' so*, Hollow where a Lodge has Stood; *Wī la nong' sī*, Beggars; in the Turkey phratry: *Lā'' lī wai yo* (not interpreted); *Muk wīng gwē ho' kī*, Rubbing the Eye; *O pīng' ho kī*, Opossum Country; *MuX ho wī Xa' kon* (not interpreted); *MuX am hok' si*, Blood Red Land; *Kū wē ha' kī*, Pine Country; *Mun' hat ko wī*, Eccentric, "Cranky"; and in the Wolf phratry: *Mung' sīt*, Big Feet; *Wī sao het' ko*, Yellow Tree; *Pa sa' kwa nu ma*, Snapping Corn; *Ola' ma ne*, Red Paint; *Mūn ha ta' ne*, Scratching Ground; *MaX so' ta* (not interpreted); *A lī' ke*, Stepping Down. All but two of these, Mun'hatkowī and Alī'ke, may be recognized, masked under differences of notation and interpretation, in the list given in Morgan's *Ancient Society* (p. 172). Some of the other clan names given by Morgan were recognized as words, but not as clan names, while still others were not recognized at all. My informants stated, however, that many clans had died out and their names were forgotten.

The names of the clans are said to have had their origin in some traditional peculiarity of their ancestors or from some locality once frequented by them. Thus, the Snapping Corn clan, the members of other clans say, received its name from the tradition that its members were accustomed to pay moonlight visits to their neighbor's cornfields and snap off "roasting ears" for their own use; while the Pine Country and Blood Red Land clans were named for localities.

The Canadian Mínsī, while retaining some remembrance of

clans of this kind, were unable to tell me their names; but these may possibly be obtained later from their tribesmen in Kansas or Wisconsin.

Members of any clan always regarded each other as near relatives, and strict clan exogamy prevailed. This, for many years at least, has not applied to the totemic group, marriages between members of the same phratry being of frequent occurrence. Membership in both clan and phratry was inherited in the female line only, the children of a couple belonging always to the clan and consequently to the phratry of the mother, whatever their father's phratry. However, a child whose parents belonged to different phratries was allowed to sit with either at the Annual Ceremony.

The old political organization has so broken down since the Delawares became scattered that a really satisfactory account can not now be obtained from the Indians. It is evident, however, that each phratry had a chief, *sakī'ma* (cf. "sagamore"), whose powers seem to have been rather limited. He managed to a certain extent the affairs of his group, and spoke for them in the councils and at the Annual Ceremony. It is said that his office was hereditary, falling to the nearest male relative within the phratry in event of his death or removal; for a chief might be deposed if the people became dissatisfied, and a new one chosen. Each chief had a counselor, or second chief, who aided him and took charge in his absence; and there was also an *ī'la*, or "brave," in each phratry who acted as war-chief, recruiting and leading war-parties. He, too, was provided with an assistant.

There was also, the Indians say, a head chief, who controlled the affairs of the entire tribe, and to whom the phratry chiefs acted as advisors; but no very definite information has yet been obtained on this subject.

Life of the Individual.—The glorious freedom of Indian life, of which the poet sings, turns out to be very much of a myth when we look beneath the surface and view in any tribe the daily round of existence as it really was, and still is in many cases. It is true that the Lenápe was seldom compelled to subject his personality and the labor of his hands to the will of another, an employer

or a master, as do the great majority of modern civilized men; neither were his actions so trammeled by police, law courts, and other human authority as ours are today. Instead he was bound by tradition, by the thousand and one rules and formulas handed down from the past. Bold indeed was the Indian who dared to turn his feet from the trail worn deep by departed generations: it seemed as if the dead hands of a hundred ancestors would reach forth to pull him back. His thought was something like this: "My grandfather was a great man; he lived thus and so, and left an honored name. Who am I, that I should presume to do things differently?" The old culture was more or less static, that of to-day, kinetic.

The chain of beliefs and observances began even before the birth of a Lenápe child. The Mínsī say that the husband of an expectant mother was often accompanied on his hunting trips by the spirit of the unborn child, whose romping and playing about the bushes, invisible to mortal eye, would nevertheless frighten away the deer and send the hunter home empty-handed. To prevent this a little bow and arrow were made and attached to the prospective father's garments, in the hope that the little spirit would play with them and stay quietly with his parent. Should this precaution fail, the child was thought to be a girl, and a little corn mortar and pestle were substituted for the miniature bow and arrow.

A new-born child, in Lenápe belief, did not obtain a firm hold on this world for some time after its arrival, its little spirit being easily coaxed away by the ever-present ghosts of the dead. For this reason it was wrapped as soon as possible in adult's clothing, by way of disguise, so that the ghosts would not notice it was new-born. Similarly deerskin strings or strips of corn-husk were tied on the wrists of children so that the ghosts would think they were tied fast to earth; and holes were cut in their little moccasins so that they could not follow the spirit trail. If the child's mother died shortly after its birth, these precautions were redoubled.

The umbilical cord was considered closely connected with the child's disposition, so care was taken to bury it in the woods to make the child fond of hunting if a boy, or, if a girl, near the lodge or in

the garden to make her fond of domestic duties. If an animal found and devoured the cord, the child was likely to resemble that animal in disposition.

Names were received most frequently from dreams. If one of the prospective parents or some friend dreamed, for instance, that someone named "Walking-with-the-trees" was coming, that name was given to the child, if a boy. If a girl, a suffix denoting "woman" was added. A name of this sort is "Finished-wings Woman." Among the Mínsĭ, at least, the name was formally announced to the tribe at the Annual Ceremony. Nicknames were common.

FIG. 41.—Lenápe father and son. WĬ ta naX koX' w'e (Walking-with-the-trees).

From the time children began to notice things about them, their education commenced. Their elders took great pains to instruct the boys as they grew in the principles and practice of hunting and warfare, the names and habits of living things, the different trees and herbs and their uses—in short, the art of woodcraft complete. The traditions, rituals, and songs of the native religion, the numerous magic formulas for the various occasions of everyday use, the iron-bound rules of tribal etiquette, the stirring tales of warlike deeds and long migrations which formed

the unwritten history of the people—all found place in the Lenáp̄e curriculum.

Girls were taught the manifold duties and arts of the household, how to tan hides, and to plant and cultivate the garden. Like the boys, they, too, received instruction in the tradition and rituals of religion, and in the rules of life laid down by the elders. Even in such a matter as the loss of the first teeth the child was taught how to blacken the inside of each tooth with charcoal as it came out, then throw it away to the east before sunrise in the morning, repeating: "Come back quick, I want to eat sweet-beans!" This was said to insure a quick growth of strong new teeth.

FIG. 42.—Lenáp̄e woman with ceremonial hat. KI cĭ lūng o neX'kwe (Finished-wings Woman).

When the Delaware boy was about ten years of age his parents began to treat him roughly and seemingly to abuse him; and finally, despite his protests, they painted his face black and drove him away from home, to wander about all day without food. Then they would take him back and treat him well for a time, only to drive him away again later. Sometimes the boys would become so inured to this treatment that they could fast for several days at a time. But the hardening process was only an incidental result of

this apparent cruel treatment—the real object was to induce some supernatural being to take pity on the suffering child and in a dream or vision offer to become his guardian spirit, at the same time giving him some "blessing" or power that would be his reliance through life. Anyone fortunate enough to obtain such a vision was always held in high esteem and was much respected by his fellows.

When the first physical signs of womanhood appeared the girl was compelled to sojourn alone in a little hut far from other habitations; and always thereafter during the time of her periodic illness she was obliged to camp by herself in a little outhouse or shelter removed some distance from the family lodge. No girl or woman in that condition was allowed to enter a family dwelling nor to touch the food or cooking utensils used by others, nor could she enter the "big house" or temple where the Annual Ceremony was enacted. Birth, the Mínsī relate, was supposed to take place in the little outhouse, and the mother was not permitted to rejoin the family for a certain number of days after the event. When the young man began to think of marriage, he told his parents, who arranged matters, if possible, with the parents of the girl of his choice. Certain formal presents were made, the acceptance of which meant a favorable decision, after which the couple began to live together without further ceremony. While such unions were frequently permanent, the parties concerned did not hesitate to separate if they failed to agree, and were then free to make new alliances. Polygyny was sometimes practised, but not within recent years.

When death visited a Lenápe home, two shots were fired at nightfall to the west of the lodge, to warn away the hovering spirit of the dead. All through the night, while the body lay in state, the watchers played the moccasin game, not in the ordinary way, but with certain songs and practices used only on such occasions. When morning dawned two more shots were fired, this time to the east, and preparations were immediately begun for the burial. Dressed in his best clothing, with painted cheeks, the corpse was laid in his shallow grave, head toward the east, and covered with sheets of bark. After the grave had been filled, a low covered pen

of logs was built above it. Often some of the belongings of the deceased were enclosed in the grave.

Public Activities.—Among the activities dear to the hearts of the old-time Lenápe, war took a prominent place. When it was decided to go on the warpath, an *ī'la*, or brave, appointed for the purpose, announced that he was about to go out "hunting men," and called for volunteers. Rarely did he call in vain, for there were always warriors who craved excitement and the chance to win renown, even when patriotic motives were insufficient to make them enlist. So they sang their war-songs and danced one by one about the war fire, as a sign that they would join the party.

After the expedition had fairly started the leader gave each of his band a little of the "brave medicine" which he carried and which was supposed to protect them from injury if they followed the regulations. A successful war-party, returning with scalps, was received with great rejoicing at the village, and a war-dance of two days' duration, with social dances every night, was arranged in honor of the victors. The dancers did not circle about in this form of war-dance, but danced eastward a little way, carrying the scalps, then back to the western side of the dance-ground where the singers sat. Sometimes these war-dances were held in obedience to visions, even in times of peace, in which case scalps were not carried.

Dearly as the Delaware loved the glory and excitement of war, the milder diversions of sports and games found a warm place in his affections. A form of lacrosse; the game of "snow-snake," in which polished wooden wands were thrown for great distances across the snow; an amusing football game, in which women contended with men, the men kicking and the women throwing the ball; the moccasin game, in which a bullet was hidden under one of a row of moccasins and the opponent required to guess which—all were popular, whole communities attending and betting against one another. Besides these three was the game of bowl and dice; the "scatter game," resembling jackstraws; a game played with a hoop and javelins, and another with bows and arrows. While not now remembered, it is possible that the phratries formerly took sides against each other in games, as the Iroquois phratries still do.

Seldom did the people gather for games or ceremonies, the Annual Ceremony excepted, without enjoying a night of social dances around a blazing fire. Among such, all different, were the Leader, Buffalo, Raccoon, Turkey, Duck, Fish, and Snake dances; also, palpably of modern origin, the Horse, Drunk, and Stirrup dances. Music was furnished by a few picked singers, who marked their rhythm with rattle and drum.

Special organizations or societies within the group were apparently not so frequent among the Lenápe as among the Iroquois, for I obtained accounts of only two, both in the Mínsī tribe. One of these was the Witches, an order composed of twelve malevolent conjurors, all holders of the "bad medicine," while the other, comprising twelve benevolent shamans, was known as the Masks, and was quite similar to the False-face Company of the Iroquois. Both had stated meetings and rites.

Among the public activities of a people is usually included the punishment of crime, but among the Lenápe, as with most Indian tribes, such matters were left largely to private agreement (or disagreement) among the interested parties. For murder the relatives of the victim usually demanded a heavy payment from the family of the slayer, but sometimes nothing would satisfy them but the death of the guilty man. In particularly atrocious cases of rape the offender frequently met death at the hands of the victim's kinsmen; but for theft, whipping, in addition to the return of the stolen property or its equivalent, was the only punishment. While the chiefs of the phratries concerned acted to a certain extent as judges or referees, there was no regular judicial system, so far as could be discovered.

Houses.—Within a few years there have been lodges still standing which the Lenápe say represent the type used by their ancestors in their fairly permanent villages. These were rectangular in ground-plan, and were constructed with a gable like a modern wall-tent, but with a hole in the top to let out the smoke. The framework was of stout poles tied together with bark withes and covered with sheets of elm-bark, the whole structure very closely resembling the type once commonly used by the Iroquois, and sometimes seen

even today among the Kickapoo, Sauk and Fox, and other Central Algonquian tribes. It is quite possible, of course, that other types also were used but have been forgotten. Within, the people spread their mats, skins, and other bedding along the walls on the bare, hard-beaten ground, or on raised sleeping platforms of poles. The fire burned in the center, while from the rafters above hung dried venison and pumpkins cut in strips, braided strings of corn

FIG. 43.—Lenápe ceremonial house.

on the cob, and numerous bundles and bags containing ceremonial articles, medicinal herbs, and other treasures. Bark-covered arbors for use during hot weather were frequently erected near the family lodge.

The outhouses used by the women ranged from the crudest kind of a brush shelter to a small but comfortable bark lodge, while little tents covered with mats, skins, or any available material were sometimes provided for boys fasting in the woods. Sweat-houses were low, dome-shaped structures of poles covered with hides, mats, or anything that would retain the steam.

By far the largest buildings erected by the Lenápe were the

ceremonial houses or "temples," called in Unámi *Xing'wī kaon* and in Mínsī *w' a' tē kan*, both meaning "big-house". The last remaining "Temple", a long, low building, stands in a lonely grove of post-oak on Little Caney river, in Oklahoma, far from any human habitation. Built of rough logs, it is now provided with a roof of hand-split shingles pierced by two great smoke-holes, as shown in the illustration (fig. 43), but in former days the roof was of bark. The length is about 40 feet from east to west, with a height at the eaves of about 6 feet, at the ridge 14 feet, and a width of 24.5 feet. Aside from certain ingenuities of construction which can not be discussed here, its chief interest lies in the two large carvings of the human face, one facing east and one west, which adorn the great central post supporting the ridge-pole. Similar carvings, but smaller, may be seen upon each of the six posts which support the logs forming the sides (fig. 44), and still smaller ones, one upon each of the four doorposts. All twelve faces are painted, the right side of each red, the left black. The building is used only for the Annual Ceremony.

FIG. 44.—Carved post in Lenápe ceremonial house.

Clothing.—From colonial times until recent years when the Lenápe took up modern clothing, the dress of the men consisted of a shirt of calico or deerskin, a robe, usually of strouding or broadcloth, a breechcloth of the same material, leggings of deerskin or cloth, and deerskin moccasins, made in one piece and puckered to a

single seam down the instep—a familiar type in the central, eastern, and southern portions of the Eastern Woodland area (fig. 41). Many shaved their heads, leaving a short bristling crest, or roach, of hair running from a point just back of the forehead to the nape of the neck. At the crown, a part of this hair, allowed to grow long, was braided into a slender queue or scalplock, upon which an eagle-feather or two was tied. Others let their hair grow and hang loose. Sometimes head-bands of fur were worn, or caps decorated with bunches of loosely attached feathers, resembling somewhat the Iroquois style. Facial painting was universal, and tattooing was frequently practised.

For many years the costume of the Lenâpe women, while Indian in style, has been made almost entirely from materials obtained from the whites. This consisted of a short calico waist with wide round collar heavy with brooches and a robe-like rectangular piece of broadcloth wrapped and belted about the waist in the form of a skirt, together with short cloth leggings and deerskin moccasins, both tastefully worked (fig. 42). A robe of broadcloth or strouding was worn over the shoulders, often beautifully decorated with ribbon appliqué, beadwork, and silver or German silver brooches, largely of Indian make.

After considerable trouble I succeeded in gaining some information from Indian sources as to the kind of clothing worn before the arrival of the whites. The robe-like piece used as a skirt, the Indians say, was formerly of deerskin or woven Indian hemp, and was worn very short. In summer the women left their upper parts uncovered, or at most tied on a piece of deerskin, over one shoulder and under the other; but in winter fur was substituted for the deerskin. In those days leggings were made of deerskin instead of cloth, and fancy embroidery in porcupine-quills and moosehair, dyed in different colors, took the place of the ribbon appliqué and beadwork seen today. Blankets made of Indian hemp and corn-husk are still remembered by some of the older Lenâpe.

The tall hat shown in figure 42, a style used for many years by the women in their dances, is certainly a remarkable creation,

based on an old beaver hat of the "stovepipe" variety, decked with nodding ostrich plumes from the trader's store, encircled with silver bands and trimmed with bright ribbons. Another head-ornament was a highly decorated flat piece of wood, stiff hide, or slate, which was tied to the woman's braid of hair at the back of her head.

Means of Livelihood.—Like most Eastern Indians the Delawares sustained life by agriculture as well as by hunting, fishing, and the gathering of berries, nuts, and other natural food products. Six native varieties of Indian corn or maize—three soft and three hard—have been handed down from the old days and are still grown, while at least three varieties of squash and pumpkin, and beans in considerable variety, were cultivated. Land was prepared for planting by girdling the bark of the trees in such a way that the tops died out, letting the sunshine in, burning the brush, then scratching up the earth among the still-standing but naked trunks into rude hills, where the women proceeded to plant their corn, squashes, and beans. They were kept clean of weeds all summer, and after the harvest the corn was braided into strings and hung, protected with bark, on poles out-doors, or suspended from the rafters of the lodge; beans were put away in bags and baskets, while some kinds of squashes or pumpkins were cut into strips and dried.

For making corn bread of several kinds, soup, mush, and hominy, the corn, often previously hulled by boiling with ashes, was crushed in a wooden mortar with a heavy pestle, usually of wood, then passed through sieve baskets of varying degrees of fineness, depending on the use. Parched corn pounded fine and mixed with maple sugar sustained the warriors and hunters on their long marches, while greens, fresh and dried berries, nuts, roots, and maple sugar were welcome additions to the Lenápe family's bill of fare.

To the men fell the very important task of supplying the tribe with meat and most of their materials for clothing. All animals valuable for their flesh or skins were hunted with bow and arrow, the blowgun being sometimes used for the smaller mammals and birds. Ingenious calls were constructed to reproduce the cry of

the fawn, or the voice of the turkey, while game could also be attracted, so the Indians believed, by certain charms and medicines, some of which were also used to make the hunter invisible to his victim, or to add effectiveness to his weapons. The deadfall and the "twitch-up" snare seem to have been the most popular varieties of traps. Venison was cut in flakes, dried in the sun, and hung away for future use; while bear's grease, used much as the whites use butter and lard, was kept in bags made of deer-hides taken off whole.

Many of the old Lenâpe fishing methods must have fallen into disuse when the tribes left the coast, but the Indians still recall spearing fish and shooting them with bow and arrow, both of which methods may be used on inland waters. A fishing party armed with such implements often set forth with torches at night, when the fish were in the shallows. Sometimes large quantities of green walnuts were crushed and thrown into pools to stupefy the fish, which soon came floating to the top and were easily landed. The most primitive method of all, perhaps, was employed when lakes or ponds were very low by reason of drought. For this, bushes of dense growth were cut and tied together, forming a rude seine of considerable length, composed of matted leaves and twigs, which could be pushed and pulled through the shallow water in such a way that the fish were surrounded and dragged to the shore.

The Mínsī tell of making fish-traps in rivers by running a close fence of poles driven firmly into the bottom from bank to bank, but leaving a narrow aperture in the center with a net behind so arranged that the fish could enter but not escape when driven downstream by beaters above.

Since the migration westward the only shellfish available for food have been freshwater mussels of different species, which were collected in considerable numbers and cooked on heated stones.

Transportation by water was of great importance while the tribes lived on the coast, and was but little less so during a large part of the slow migration westward. But when the people reached Kansas and Oklahoma, where waterways are scarce, the art of canoe building was lost, although the memory of it still lingers.

The dugout seems to have been the most popular form among the Lenápe, but lighter canoes of elm and hickory bark were also made. All were propelled in the usual way, with poles and paddles. For temporary use six or more logs lashed together in the form of a raft with bark withes carried people and baggage across waters or down streams as required. Pack-baskets of various sizes, carried with the aid of a burden strap across the chest, were used by everyone.

Industries.—The old native arts and industries are today for the greater part abandoned, but many are still remembered by the older Lenápe. In woodworking, the use of fire for hollowing out mortars, bowls, and canoes is the most primitive process that has survived until recent years. The workman merely laid hot coals on the spot he wished to hollow out, then after these had lost their heat he scraped out the charcoal with a musselshell or other suitable implement; then repeated the process.

Bowls, buckets, canoes, twine, and rope were manufactured from different kinds of bark, which was also used to cover lodges, while the ubiquitous basket was here made of splints and of certain tough roots which were boiled and split, then woven together, usually in the "twined" technique. A good account of the tanning of hides was obtained, but the processes of pottery making, stonework, the working of bone, horn, antler, and shell are now largely forgotten. Several native silversmiths still work at their trade among the Delawares of the Washita: their bracelets, brooches and other ornaments are made by the same processes of hammering-out, cutting, stamping, and engraving, all with the crudest of home-made tools, as were noticed among the Iroquois.[1]

For many years decoration with beadwork and ribbon appliqué has superseded the ancient art of embroidery with colored hair and porcupine quills, now nearly forgotten. Skillful enough in beadwork, the Delaware women are experts in ribbon appliqué, seen as decoration on moccasins, leggings, robes, and the like (pl. VI, *b*). Different colored ribbons are cut into patterns, mainly

[1] Harrington, Iroquois Silverwork, *Anthr. Papers American Museum of Natural History*, vol. I, pt. VI, 1908.

angular, some curved, then sewed together in strips so deftly that the stitches can hardly be seen. These strips can then be sewed upon the garment in such a way as to be removable at pleasure. The art is of singularly wide distribution, being seen at its best among the Miami, Peoria, Delaware, Shawnee, Potawatomi, Sauk and Fox, and Kickapoo; while it may also be found among the Alibamu, Koasati, Seminole, Osage, Iowa, Oto, Kansa, Quapaw, Winnebago, Eastern Ojibwa, the Iroquois tribes, Penobscot, Micmac and other peoples.

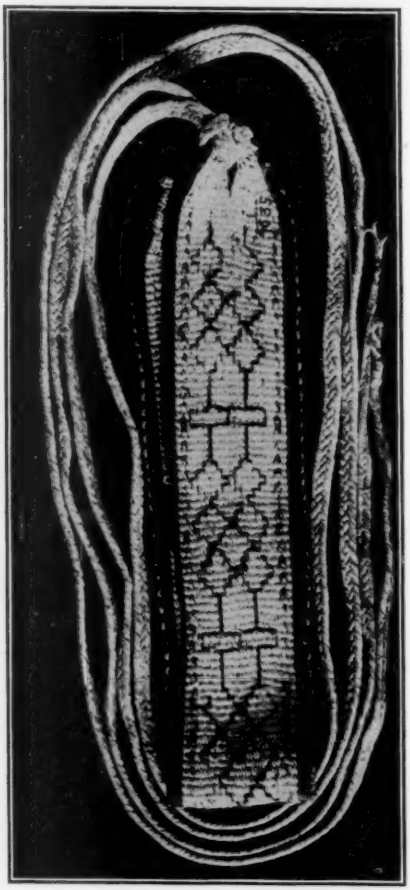


FIG. 45.—Lenape woven pack-strap.

Much was heard about the old textiles of the Delawares, but nothing was actually found in the way of specimens except two remarkable medicine-bags and a few burden-straps (fig. 45). The different bands reported the former use of Indian hemp robes and robe-skirts woven in patterns, the wide use of corn-husks woven or coiled into sacks, mats, and even robes, and the use of rushes for mats and sacks.

The two medicine-bags seen in figure 46 have been in use, the Indians say, ever since the Lenape lived by the Great Water, and

FIG. 46.—Lenape woven medicine-bags.

have been carried by them on all their migrations. Certainly they bear every mark of antiquity, and seem to be unique. Fine examples of purely aboriginal textile art, they are the only pieces

of Lenâpe weaving, with the exception of the burden-straps and a corn-husk mat, ever seen by the writer. The material seems to be Indian hemp, the lining deerskin. Both are decorated with zigzag lines of symbolic lightning, worked out in dark brown and white. They contain, in smaller deerskin bags, a finely divided shining substance resembling mica, which was, according to Indian belief, taken from the scales of the great mythical Horned Serpent, and constitutes a very powerful "rain medicine." They say it is necessary only to expose a few of the "scales" on a rock beside some stream to make the black thunder-clouds rise and refresh the thirsty corn-fields with rain. The explanation is found among the legends of the Lenâpe, which relate the violent hatred between the Thunder Beings and the water monsters. If a Horned Serpent as much as shows his head above the water, clouds will arise bearing the Thunder Beings to attack him. Hence the belief that even part of a Horned Serpent will draw the thunder-clouds.

Beliefs and Ceremonies.—Perhaps the most interesting phase of Delaware life is expressed in their religious beliefs and ceremonies, of which only a brief account, unfortunately, can be given here.

At the head of their Pantheon stands Gīcēlamû′kaong‘, usually translated "Great Spirit," who is also called, in the Mínsī dialect, Pa′′tumawas, rendered "He who must be petitioned." This being is the great chief of all, and dwells in the twelfth, or highest, heaven above the earth. He created everything, either with his own hands or through agents sent by him, and all the great powers of nature were assigned to their duties by his word.

He gave the four quarters of the earth and the winds that come from them to four powerful beings, or Manit′towuk, namely, Our Grandfather where daylight begins, Our Grandmother where it is warm, Our Grandfather where the sun goes down, and Our Grandfather where it is winter. To the Sun and the Moon, regarded as persons and addressed as Elder Brothers by the Indians, he gave the duty of providing light, and to our Elder Brothers the Thunders, man-like beings with wings, the task of watering the crops, and of protecting the people against the Great Horned Serpents and other water monsters. To the Living Solid-face, or Mask-being, was

given charge of all the wild animals; while Our Mother, the Earth, received the task of carrying and feeding the people.

Besides these powerful personages were many lesser ones, such as the Small People, the Doll Being, the Snow Boy, and the Great Bear. Certain localities, moreover, were the abode of supernatural beings, while animals and plants were thought to have spirits of their own. Besides these there were, of course, the countless spirits of the human dead.

This, then, was the supernatural world which, to the mind of the Lenápe, controlled all things—on which they must depend for health, for success in all their undertakings, even the daily task of deer hunting or corn-raising. Benevolent beings must be pleased, and bad spirits combated and overcome, or at least placated.

The main channel of communication between the supernatural world and man was the dream or vision, obtained, as before described, by fasting and consequent purification in youth. Through the vision the young man obtained his guardian spirit or supernatural helper, who gave him some power or blessing that was his main dependence through life, his aid in time of trouble, the secret of his success. No wonder, then, that visions and helpers form the basis of Lenápe belief and worship. I heard of one man, a Mínsī, who claimed the Sun as his protector. Sometimes, it is said, he would hold his bare hands up toward the flaming face of his guardian, then would press them against his own cheeks. When he removed his hands, it was seen that his face, clean before, was now painted in brilliant colors! "Surely," the people cried, "this man is in league with the Sun!" Another old warrior used to seem strangely excited when the black clouds began to gather on the horizon and spread themselves over the land. Stripping himself to the breechclout he was ready to go out when the storm broke. He loved to expose his body to the driving gusts of wind and rain—the dazzling lightning flashes were his delight, the appalling roar was music to his ears—he was "in league with the Thunders." Others claimed such helpers as the "Living Solid-face," the Spirits of the Dead, the Owl, the Wolf, or the Wild Duck.

Those favored by such visions were considered the leading people

of their community. They usually composed rhythmic chants referring to their visions, and appropriate dance songs to go with them, to recite at the Annual Ceremony.

Belief in a soul or spirit surviving the death of the body formed an integral part of Lenápe philosophy. It is supposed to linger near for eleven days after death, and is addressed and offered food by the surviving relatives, sometimes in a formal "Feast of the Dead;" but on the twelfth day, they say, it leaves the earth and finally makes its way to the twelfth or highest heaven, the home of the Great Spirit, where it leads a happy life in a land where work and worry are unknown. Some persons are thought to have the power of communicating with the departed. The Indians say that the blood in the dead body draws up into globular form and floats about in the air as a luminous ball, but this is not the real spirit.

The greatest religious event of the Delaware year, which remains the best expression of the old tribal life, is the Annual Ceremony, held in the specially constructed "temple" or "big house" before mentioned (fig. 43). About this quaint old structure, when the October leaves are yellow, the people pitch their camps, to renew again their ancient rites for twelve consecutive nights, while within the building, the twelve grim, carved, painted faces, frowning from the wooden pillars, watch and see that all is well. These represent the twelve messengers of the Great Spirit.

Dry grass is spread around the sides of the house, and where the people sit, each phratry in its appointed place, the center being left free except for two great fires which furnish light and heat. Three men and three women are appointed as caretakers, to guard and sweep the building, cook and serve the feasts, and tend the fires. When the people have gathered, some time after dark, one of the chiefs makes a speech in which he addresses the Great Spirit and the Manit'towuk, his helpers, giving thanks for past benefits and praying for future ones. Then after he has set forth the rules of the ceremony and delivered some moral homilies, he gives the floor to the leader of the meeting, who, standing by the great central post with its weird carved faces, begins to shake a little rattle of

LENÁPE CEREMONIAL OBJECTS

A, Mask. B, C, Drumsticks. D, Prayer wands. E, Turtle-shell rattle. F, Drum.

box-turtle shell (pl. IV, *e*) and chant, in a high monotone, the story of his vision. Meanwhile two drummers have taken their places before a peculiar drum made by rolling up a dry deer-hide and stuffing it with grass (pl. IV, *f*). As the chanter utters each word the drummers repeat it in the same tone, producing a very peculiar effect. Finally the recital is finished, and he starts his dance-song, which the drummers take up, beating time with flat drumsticks (pl. IV, *c*), and dances about the fires, still shaking his rattle, followed by as many of the people as care to join. When he has finished all his verses, after a short intermission, the turtle-rattle is passed from hand to hand until it reaches the next man blessed by a vision, who, in his turn, takes up the exercises, and the whole performance is repeated, with the exception that the songs are different, to conform with the new leader's supernatural experience.

When the turtle-rattle has made the circuit of the "big house," usually along toward morning, the people raise their left hands and repeat the cry "*Hooooo*" twelve times. The twelfth cry, they say, reaches the twelfth or highest heaven and is heard, as a prayer, by the Great Spirit. A morning feast is next in order—corn-meal mush, called *súppan*, eaten with musselshells for spoons. Then the participants disperse until the next night.

On the fourth day a band of hunters set out to obtain venison for the feasts in the "big house," returning the seventh day. Before leaving, they beseech the Misīng′wᵋ, or Solid-face, the guardian of game, to give them good luck. This being is impersonated by a man wearing a bear-skin costume and a wooden mask painted half red and half black (pl. IV, *a*), and carrying in his hands a staff and a turtle-shell rattle. Solid-face is seen about the camps from time to time as the ceremony progresses, frightening the children into good behavior, and occasionally entering the "big house."

Each night the same performance is repeated until the ninth, when the ashes in the fireplaces are carried out of the western door, used only for this purpose, and a new fire is lighted with fire-sticks, operated, like those of the Iroquois, on the pump-drill plan. Prayer-sticks, to hold up when the cry of "*Hooooo*" is raised, are distributed this night (pl. IV, *d*), and a pair of very old forked drum-sticks, each

bearing the carving of a human face (pl. IV, *b*), take the place of the plain sticks used before. One of the old sticks bears carved breasts to represent a female, and the two are said to symbolize worship by both men and women. The sticks are somewhat similar to those I found among the Grand River Delawares in Ontario, now in the American Museum of Natural History. The pair obtained in Oklahoma for the University of Pennsylvania Museum were, the Delawares say, brought from their eastern home when the tribe migrated.

The twelfth night is given up to the women to recite their visions. The day after, about noon, the worshippers file out, and forming a line facing the east, raise their hands and cry twelve times to the Great Spirit, the prayer word "*Hooooo*". This ends the ceremony; but before they leave, the care-takers, the drummers, the speaker—everyone who has been of service to the meeting—is paid with wampum, which is afterward redeemed with money at the rate of one cent per bead, and is saved to use again the next time.

Another form of this worship, now obsolete, was noted, lasting only eight days, and differing in some other particulars. The Mínsī Annual Ceremony, as related to me by the late James Wolf of Munceytown, Ontario, differed from the above in only a few minor details, one of which was the absence of a Solid-face, none being allowed in the Mínsī "big house." Their twelve mask-holders had a meeting-house of their own—in fact, like those of the Iroquois, they formed a society of shamans whose chief function it was to expel disease.

The Unámi Solid-face, on the other hand, was the chief patron of the chase, and was supposed to have the power of bringing back lost or stolen cattle and horses, the doctoring function being called into play only rarely, if at all. His special ceremony, a dance with a feast, was held in the open air in the spring, but can not be described in detail here. To offset any notion that the Unámi Solid-face might have been borrowed from the Iroquois in comparatively modern times, I will quote a few lines written by Rev. David Brainerd, a missionary to the Delawares,[1] September 21,

[1] *Memoirs of the Rev. David Brainerd, Chiefly Taken from his Own Diary*, by Rev. Jonathan Edwards (including his Journal), New Haven, 1822, pp. 237–238.

1745, relating an occurrence of the previous May. Speaking of a "devout and zealous Reformer, or rather restorer of what he supposed was the ancient religion of the Indians," whom he met a hundred and thirty miles up the Susquehanna, above the English settlements, he said: "His . . . garb . . . was a coat of boar [bear?] skins, dressed with the hair on, . . . a pair of bear skin stockings; and a great wooden face painted, the one half black, the other half tawny; . . . the face fastened to a bear skin cap. . . . The instrument he had in his hand, . . . which he used for music . . . was a dry tortoise shell with some corn in it." This is an accurate description of the Solid-face in recent use among the Oklahoma Lenáape.[1]

Little wooden images, in human form, some male, some female, are still kept by certain Delaware families who, regarding them as mystic protectors of their health, give them a dance and feast every year, together with a fresh supply of clothing. These are similar to the little Nahneetis figure, once the property of the Canadian Mínsī, now in the American Museum of Natural History.[2]

One family maintained an otter cult, with an annual ceremony called "Feeding the Otter," in which a man, wearing an otter-skin, impersonated that mysterious animal, whose advice, given in a dream, had originated the cult many years before. Similarly a bear cult was kept up by another family. For the ceremony entailed by this belief, enacted every two years, a special lodge was built of brush, in which the head of a bear (later that of a hog) was carried about the fire in time to certain chants, and portions of the animal were burned as a sacrifice.

Within the last twenty or thirty years two new religions have been introduced among the Oklahoma Delawares by the Caddo—the Ghost Dance and the Peyote (or Mescal) Rite. The former belief soon died out, but the latter still persists, and at last accounts was even growing in favor.

[1] Brainerd also says, speaking of the same man: "He had a house consecrated to religious uses, with divers images cut upon the several parts of it"—undoubtedly a "big house" such as I have here described.

[2] Illustrated and described by Harrington, Vestiges of Material Culture among the Canadian Delawares, *American Anthropologist*, N. S., vol. 10, no. 3, pp. 417–418.

Charms, Medicine, and Witchcraft.—Besides the "rain medicine" contained in the woven bags before described, I succeeded in obtaining the charm known as "giant bear's tooth," used for wounds or other injuries. A little of the tooth is scraped off and given to the patient in water, with appropriate incantations. Many other charms, for good luck, gambling, hunting, love, and war were used.

Herbs and roots, the sweat or steam bath, and the various magic arts of the medicine-man or shaman, all figured in the treatment of the sick.

A tradition is still current among the Lenápe which attributes the origin of witchcraft to the Nanticoke (One''tko), who seem to have borne this evil reputation a long time, for Heckewelder noted the same tradition concerning them a hundred years ago.[1] Witches, it was thought, could fly through the air at night with the aid of the "bad medicine," or might take the form of certain animals, in which guise they could go about unobserved to work their magic arts, to give their enemies bad luck, or to make them sicken and die. As before noticed, there was said to be an organized society of witches among the Mínsī.

Cosmology.—The subject of Lenápe cosmology is very difficult to master at the present day, for the spread of Christianity and book-learning have almost put an end to native ideas. The cosmic myth was nowhere found in satisfactory entirety, but the bare outlines, so far as obtained from strictly Indian sources, without reference to published accounts, are as follows: Some time after Gīcēlamû'kaong' had created the world it became flooded with water, and it seemed to be a difficult matter to find earth with which to commence a new one. The Great Spirit (some Mínsī say Nā'napûsh,[2] an agent delegated by him) began to send down the various water animals which still survived to try to bring earth up from the bottom, but one by one they failed, and floated up to the surface dead. At last the muskrat was sent, and he succeeded

[1] *An account of the History, Manners and Customs of the Indian Nations who once Inhabited Pennsylvania and the Neighboring States*, by Rev. John Heckewelder, p. 76.

[2] Other Mínsī claim that the introduction of Nā'napûsh into this myth is due to Eastern Ojibwa (Missisauga) influence.

LENÁPE BEADED SHOULDER-POUCH

in bringing up a little dirt in his paws. This was placed on the back of a turtle, which, with the mud upon it, immediately began to increase in size, until the "great island upon which we live" was formed, round and flat, floating upon the waters.

The Sun, as before mentioned, was regarded as a person, or rather a manit'to, or spirit, and it was thought that he stopped in his course for a little while at midday, then went on. The Moon was a person also, and the stars were variously regarded as persons and animals. The heaven is twelve-fold, and in the twelfth or highest lives the Great Spirit. The four directions are respectively known as "Where the daylight appears" or east, "Warm place" or south, "Where it (the Sun) goes down" or west, and "Winter place" or north. As before noted, each direction is in charge of a powerful manit'to, or spirit, each one causing the wind from his own particular quarter. When the alternate cold blasts and warm winds are felt in winter, the Manit'towuk of the North and the South are playing the game of bowl and dice, first one winning, then the other. The tornado is a gigantic and powerful spirit walking on his hands, his long hair trailing the ground and wiping out forests and villages. Man-like beings with wings produce the thunder and bring the storms; the lightning-flashes are their arrows.

Measures of Time and Space.—Time was divided into years, each having four seasons and approximately twelve moons, appropriately named. One of the spring moons was known as "Frog Moon," while another, about July, was "Real Summer Moon," and still another, about January, "Dreaded Moon."

The divisions of the day were: morning, near-noon, noon (where the sun stands still), past noon, evening (going-down-quick time), sunset, dark, and midnight. The time of day was defined more exactly by pointing with the finger to the position of the sun at the time referred to—"sun about so high."

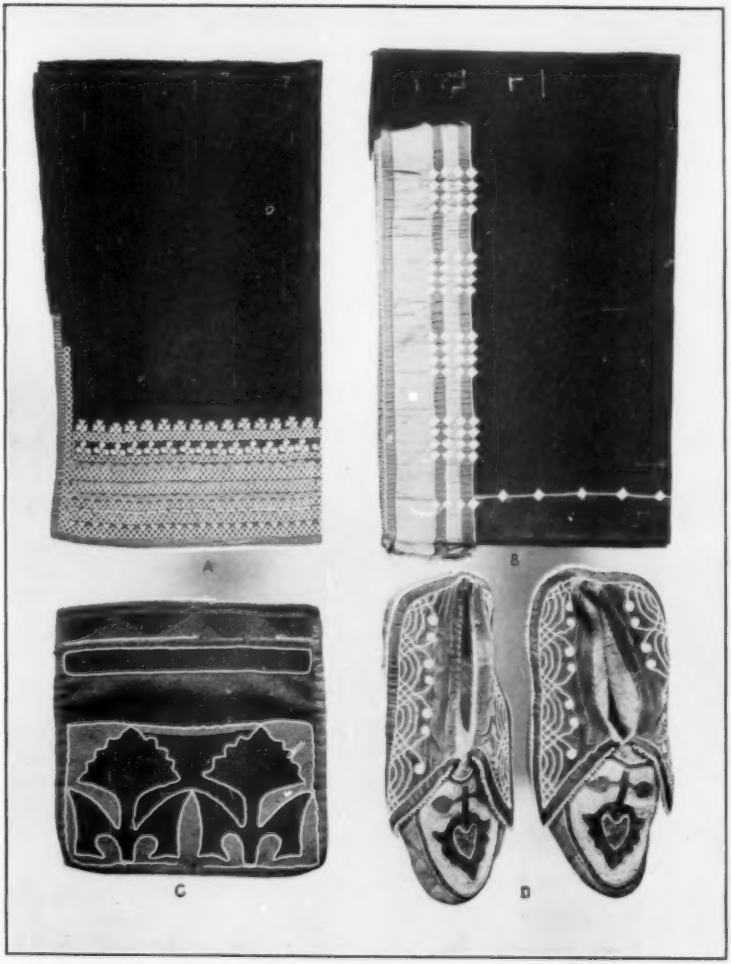
Two linear measures have so far been found, the "step," about two feet, and the "long as the back," somewhat less than a yard, the first used for measuring ground, the latter for wampum. One hundred beads of wampum are supposed to equal the "long as the back."

Records.—Little was found in Oklahoma regarding the recording or communication of ideas by artificial means, but the Canadian Lenáp̌e reported the use of pictures painted or scratched on flat pieces of wood, peeled trees, or other suitable surfaces, which could be read by any Indian. For preserving rituals and sometimes other records, wampum was often strung into strings and belts in different combinations of the white and purple beads which could be easily read, but only by the initiated.

However, the sacred myths, historical traditions, and the vast aggregation of songs, tales, and anecdotes, forming what might be called the unwritten literature of the people, were handed down for the most part by word of mouth. It is noticeable that the wonder stories of the dealings of mankind with the mysterious spirits and animals were never told except in winter, when everything is frozen up and no little insect or reptile could hear and report what was said. "Culture hero" myths of undoubted Lenáp̌e origin have not been encountered as yet.

Art.—The esthetic instinct of the Lenáp̌e is today restricted in its expression to patterns worked in beads, ribbons (pl. v, vi), and on silver; but in former years the field of art was, of course, much wider. Very tasteful patterns and combinations of colors are evolved, curved designs, in the main conventionalized plant forms, predominating in the beadwork, and geometrical combinations of triangles, squares, and elongated hexagons in the ribbon work (pl. vi, *b*). The decorations on silver articles consist mainly of straight lines, curved lines, dots, and circles, arranged in various combinations, mainly geometric, but animal forms and highly conventional floral patterns are sometimes seen. True symbolism is seen only in the shape or decoration of certain ceremonial objects, as in the case of the lightning symbols used in decorating the bags for the rain-medicine (fig. 46).

Music.—While resembling that of other Eastern tribes, the music of the Lenáp̌e seems to possess certain peculiarities of its own, which a competent musician might work out. It is almost entirely vocal, the only true musical instrument on which tunes can be played being the native flageolet of cedar. The dry hide drum



LENÁPE BEADWORK AND RIBBONWORK

A, Women's beaded leggings. B, Women's ribbonwork leggings. C, Beaded pouch. D, Beaded moccasins.

(pl. IV, *f*), the water drum, and the hoop drum were also used, together with rattles of turtle-shell (pl. IV, *e*), horn, and gourd.

Conclusion.—It will be seen from the foregoing sketch of Lenápe culture, that while resembling other Eastern and Central Algonquian tribes in many points, and the Iroquois in a few, these people show considerable individuality, especially in matters ceremonial and religious. Even the Shawnee, with whom they have been long associated, possess a distinctly different system. The influence of other tribes in these matters is not very apparent except in the Mínsī division, where considerable Iroquois influence may be seen. But even here the foreign influence does not seem to have reached the Annual Ceremony. To what extent Lenápe religion, as here described, has been modified by European contact would be difficult to determine.

It must be understood, in conclusion, that the Delawares now live in frame and log houses fully as well appointed, as a rule, as those of the surrounding whites, and engage in the modern form of farming and in other occupations like their neighbors; that the daily use of Indian costume has long since been abandoned; that many of the ceremonies are no longer performed; that the native political and social organization is rapidly breaking down; that even the language is falling into disuse among the younger generation. In short, the greater part of the people are ignorant of the things of the past, and one must search diligently to find anyone able to give detailed information.

UNIVERSITY OF PENNSYLVANIA MUSEUM
PHILADELPHIA

LINGUISTIC STOCKS OF SOUTH AMERICAN INDIANS, WITH DISTRIBUTION-MAP

By ALEXANDER F. CHAMBERLAIN

IN 1906[1] the writer published a tentative list of the linguistic stocks of the South American Indians and announced the preparation of a colored distribution-map to accompany the same. Since that time his own investigations have led to some modifications, as have also the recent extensive studies of such philologists and ethnologists as Rivet, Beuchat, Koch-Grünberg, and M. Schmidt, both by reason of the accumulation of new and the revision of old material. Preliminary to the final revision of the distribution-map in colors, it may serve some good purpose to publish this list of stocks with the outline-map accompanying it. It will be noticed that not all the conclusions aimed at by Drs Rivet and Beuchat are accepted, a number of them requiring more proof than is yet forthcoming. This is particularly true of some of the larger relationships suggested by these excellent authorities. The list of stocks is as follows, references being given to comprehensive discussions or recent articles where possible:

1. **Alikulufan.** See A. F. Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 89–92.
2. **Allentiacan.** See Chamberlain, ibid., 1912, n. s., XIV, 499–500.
3. **Andaquian.** See P. Rivet in *l'Année Linguistique*, 1908–1910 [Paris, 1912], IV, 126, 145–148.
4. **Apolistan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 179.
5. **Araucanian.** See B. Mitre, *Catálogo Razonado de la Sección Lenguas Americanas*, I (Buenos Aires, 1909), pp. 311–338; R. Lenz, *Estudios Araucanos* (Santiago de Chile, 1895–1897); R. R. Schuller, *El Vocabulario Araucano de 1642–1643*, etc. (Santiago, 1907).
6. **Arawakan.** See Dr T. Koch-Grünberg in *Mitt. d. Anthr. Ges. in*

[1] *C. R. Congr. Internat. d. Amér.*, XV^e Sess., Québec, 1906 [1907], t. II, pp. 187–204.

Wien, 1911, XLI, 33–153, 203–256; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1913, n. s., X.

7. **Ardan.** Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, p. 180; Rivet, in *l'Année Linguistique*, 1908–1910 [1912], IV, 134. Dr Rivet has come into possession of, and intends soon to publish, an extended catechism in the Arda language. The other material known consists solely of the *Pater Noster* and *Ave Maria*.

8. **Atacameñan (Atacaman).** See Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 465–467.

9. **Aymaran.** See E. W. Middendorf, *Die Aimará-Sprache* (Leipzig, 1891); J. J. v. Tschudi, Culturhistorische und sprachliche Beiträge zur Kenntnis des alten Perú, in *Denkschr. d. K. Akad. d. Wiss.*, Wien, 1891, XXXIX, 1–220; D. G. Brinton, *Studies in South American Native Languages* (Phila., 1892); G. A. Dorsey, *A Bibliography of the Anthropology of Peru* (Chicago, 1898); Mitre, *Catálogo*, II (Buenos Aires, 1910), 236–262.

10. **Barbacoan.** See Beuchat and Rivet in *Affinités des Langues du Sud de la Colombie et du Nord de l'Équateur* (Louvain, 1910. Extr. du *Muséon*). These authors recognize a "Barbacoa group" (Cuaiquer, Cayapá, Colorado), which, together with their "Paniquita group" and "Coconuco group," they seek to attach to the Chibchan stock. But some further proof of this is needed.

11. **Betoyan.** See Brinton, *Studies in South American Native Languages* (Phila., 1892), and in *Proc. Amer. Philos. Soc.*, 1892, XXX, 100–105, 271–278; Koch-Grünberg in *Ztschr. f. Ethnologie*, 1906, XXXVIII, 166–205, *Anthropos*, 1912, VII, 429–462, and *Zwei Jahre unter den Indianern Nordwestbrasiliens* (Berlin, 1909–1910); Beuchat and Rivet, *La famille betoya ou tucano* (Paris, 1911. Extr. *Mém. de la Soc. de Ling. de Paris*, XVII). Beuchat and Rivet, believing that the Betoya language proper, from which the stock has hitherto been named, has Chibchan affinities, propose to term the Betoyan stock "Tucano," after a prominent language of its eastern division. But it is perhaps best to continue the older name.

12. **Bororoan.** See Chamberlain in *Amer. Anthr.*, 1912, n. s., XIV, 501–503.

13. **Calchaquian.** See Chamberlain, ibid., 503–507.

14. **Cañarian.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 181; Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 132.

15. **Canichanan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 181.

16. **Carayan.** See H. Coudreau, *Voyage au Tocantins-Araguaya* (Paris, 1897); P. Ehrenreich in *Zeitschrift f. Ethnologie*, 1894, XXVI, 20–37, 49–60; Krause, *In den Wildnissen Brasiliens* (Leipzig, 1911); Chamberlain in *Science*, 1913, n. s., XXXVII, 344.

17. **Cariban.** See L. Adam, *Mat. p. servir à l'étabi. d'une gramm. comp. des dialectes de la famille Caribe* (Paris, 1893); de Goeje in *Int. Arch. f. Ethnogr.*, 1906, XVII, Suppl. Bd., 1–177, and ibid., 1908, XIX, 1–34; Koch-Grünberg in *Zeitschrift f. Ethnol.*, 1906, XXXVIII, 166–205, and *Anthropos*, 1908, III, 83–104, also *Zwei Jahre unter den Indianern*; J. N. Rat in *J. Roy. Anthr. Inst.* (Lond.), 1897–98, XXVII, 293–315; K. v. den Steinen, *Die Bakaïrí-Sprache* (Leipzig, 1893). Dr Koch-Grünberg gives, in his article in *Anthropos* (pp. 90–95), a useful list of grammars and dictionaries in various dialects of the Cariban stock. See also Mitre, *Catálogo*, II (1910), 280–296, 299–314, and Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 138–140.

18. **Caririan.** See L. Adam, *Mat. p. servir à l'etabl. d'une gramm. comp. des dialectes de la famille Kariri* (Paris, 1897); Mitre, *Catálogo*, II (1910), 297–299; Chamberlain in *Science*, 1913, XXXVII, 344.

19. **Cayubaban.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 182.

20. **Changoan.** See Chamberlain, ibid., 183.

21. **Chapacuran.** See Chamberlain in *Amer. Anthr.*, 1912, n. s., XIII, 632–635; G. de Créqui-Montfort and P. Rivet in *Journ. de la Soc. d. Amér. de Paris*, 1913, n. s., X, 119–171. G. de Créqui-Montfort and P. Rivet, and A. F. Chamberlain have recognized the kinship of Ité, Chapacura, Quitemoca, and Pawumwa (the last on the basis of Haseman's vocabulary in *Amer. Anthr.*, 1912), Chamberlain suggesting, provisionally, Pawumwan as a name for the whole family. This abolishes the *Itenean* as a separate stock. Another dialect of this stock, as these authors show, is the Napeka, which, like Quitemoca, is very close to Chapacura, as is also Pawumwa. Ité is more remotely related. De Créqui-Montfort and Rivet (p. 146) think that to the Chapacuran family belong, in all probability also, the languages of the "Sansimonianos" (Mission of Simon) Indians, known as Chapacuraca, Mure, Rocorona, Orocotona, Rotorõño, Ocoróno, as well as the Herisobocono or Hericebocóno. More proof of this, however, is needed, perhaps.

22. **Charruan.** See Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 469–471; Schuller, *Sobre el Orîjen de los Charrúas* (Santiago, 1906).

23. **Chavantean.** See H. v. Ihering, *The Anthropology of the State of S. Paulo, Brazil* (2d ed., S. Paulo, 1906); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 185; Chamberlain in *Science*, 1913, XXXVII, 344.

24. **Chibchan.** See R. de la Grasserie in *Journ. de la Soc. d. Amér. de Paris*, 1904, n. s., I; Pittier de Fábrega in *Mem. Amer. Anthr. Asso.*, 1907, I, 301–356; K. Sapper in *Arch. f. Anthr.*, 1903, N. F., III, 1–38; W. Lehmann in *Zeitschrift f. Ethnologie*, 1910, XLII, 687–749; C. Thomas and J. R. Swanton, *Ind. Lang. of Mex. and C. Amer.* (Washington, 1911); Beuchat and Rivet, *Affinités des Langues du Sud de la Colombie*, etc. (Louvain, 1910).

25. **Chiquitan.** See L. Adam, *Arte y Vocabulario de la lengua Chiquita* (Paris, 1880); J. Cardús, *Las Misiones Franciscanas entre los Infieles de Bolivia* (Barcelona, 1886); Mitre, *Catálogo*, II (1910), 279–280.

26. **Chocoan.** See Brinton in *Proc. Amer. Philos. Soc.*, 1896, XXXV, 202–204, and ibid., 1897, XXVI; A. L. Pinart, *Vocabulario Castellano-Chocóe* (Paris, 1897); Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 123–126.

27. **Cholonan.** See Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892), pp. 30–36; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 185.

28. **Chonoan.** See Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 467–468.

29. **Coconucan.** See Beuchat and Rivet, *Affinités des Langues du Sud de la Colombie*, etc. (Louvain, 1910).

30. **Corabecan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 186.

31. **Cunan.** See F. P. de Llisa, *Pequeño Catecismo Cristiano* [ed. Pinart and Carranza] (Paris, 1890); Pinart, *Vocabulario Castellano-Cuna* (Paris, 1890); Pinart, *Notes sur les tribus indiennes de famille guarano-guaymie de l'isthme de Panamá*, etc. (Chartres, 1900); J. D. Prince in *Amer. Anthr.*, 1912, N. S., XIV, 109–126.

32. **Curucanecan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 187.

33. **Enimagan.** See Brinton, *The Linguistic Cartography of the Chaco Region* (Phila., 1898); P. A. Huonder in *Globus*, 1902, LXXVIII, 387–391; L. Kersten in *Int. Arch. f. Ethnogr.*, 1904, XVII, 1–75;

Koch-Grünberg in *Mitt. d. Anthr. Ges. in Wien*, 1902, XXIII, 130–148. The Enimagan corresponds, more or less, to the Maskoi of Koch-Grünberg, the Machicui (or Muscovi) of Ehrenreich.

34. **Esmeraldan.** See E. Seler, Die Sprache der Indianer von Esmeraldas, in *Gesammelte Abh. z. amer. Sprach- u. Altertumsk.*, I (Berlin, 1902), 49–64; Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 131.

35. **Goyatacan.** See K. von den Steinen, *Durch Central Brasilien* (Leipzig, 1886); G. v. Koenigswald in *Globus*, 1908, XCIV, 27–32, 45–49; Ehrenreich in *Arch. f. Anthr.*, 1905, N. F., III, 39–75.

36. **Guahiban.** See M. Fernandez y M. Bartolomé, *Ensayo de gramática hispano-goahiva* (Bogota, 1895); B. Tavero-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); A. Ernst in *Ztschr. f. Ethnologie*, 1891, XXXIII, 1–13; Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 128–131. The affinity between the Churoya and Guahiba languages, suggested by Ernst in 1891, seems confirmed by Rivet, and in consequence the former disappears as an independent family, to become a dialect of the Guahiban stock. According to Rivet (p. 130), the Guahiban occupies all the territory between the Orinoco, the Meta, and the Vichada.

37. **Guaraunan.** See Adam in *C.-R. Congr. Int. d. Amér.*, Stockholm, 1894, X; E. F. Im Thurn, *Among the Indians of Guiana* (London, 1883); Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907).

38. **Guatoan.** See J. Koslowsky in *Rev. d. Mus. de la Plata*, 1895, VII, 221–250; E. Monover in *Journ. de la Soc. d. Amér. de Paris*, 1905, n. s., II, 155–158; Schmidt in *Verh. d. Berl. Ges. f. Anthr.*, 1902, 77–89, *Zeitschrift f. Ethnologie*, 1912, XLIV, 130–174, and *Indianer-Studien in Zentralbrasilien* (Berlin, 1905); Chamberlain in *Science*, 1913, XXXVII, 344.

39. **Guaycuruan.** See Brinton, *Ling. Cartogr. of Chaco Region* (Phila., 1898); Huonder in *Globus*, 1902, LXXXI, 387–391; Kersten in *Int. Arch. f. Ethnogr.*, 1904, XVII, 1–75; Koch-Grünberg in *Globus*, 1902, LXXXI, 1–7, 39–46, 69–78, 105–112 (also *Mitt. d. Anthr. Ges. in Wien*, 1903); Schuller, *Sobre el Orijen de los Charruás* (Santiago, 1906).

40. **Itonaman.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 189.

41. **Itucalean.** See Chamberlain, ibid., 189; Beuchat and Rivet (*Ztschr. f. Ethnol.*, 1909, 621) suggest that the Itucale may be Panoan.

42. **Jivaran.** See Beuchat and Rivet in *Anthropos*, 1909, IV, 805–822;

1910, v, 1053–1064, 1109–1124. These authors show that the "Jivaro" of Brinton (*Studies in S. Amer. Nat. Lang.*, 1892) is really Jébero or Xébero, and belongs to what they term the "Cahuapana" = Mainan (q. v.) family or stock.

43. **Jurian.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 190.

44. **Lecan.** See Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892), 36–38; S. A. Lafone-Quevedo, *La lengua Leca* (Buenos Aires, 1905); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 190.

45. **Lorenzan.** See Chamberlain, ibid., 191.

46. **Lulean.** See Brinton, *Ling. Cartogr. of Chaco Region* (Phila., 1898); Huonder in *Globus*, 1902, LXXXI, 387–391; Kersten in *Int. Arch. f. Ethnogr.*, 1904, XVII, 1–75; Lafone-Quevedo in *Bol. Inst. Geogr. Argent.*, 1895, XVI, 42–84, and ibid., 1894, XV, 185–246.

47. **Mainan.** See Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892), under "Jivaro"; Beuchat and Rivet in *Zeitschrift f. Ethnol.*, 1909, XLI, 616–634. The Mainan of the present writer corresponds, more or less, with the "Cahuapana," by which name Beuchat and Rivet seek to baptize this stock, after a prominent member thereof. Included in Mainan is probably the Laman, formerly listed as a separate stock.

48. **Makuan.** See Koch-Grünberg in *Anthropos*, 1906, I, 877–906, and *Zwei Jahre unter den Indianern* (Berlin, 1909–1910).

49. **Matacan.** See Brinton, *Ling. Cartogr. Chaco Region* (Phila., 1898); Huonder in *Globus*, 1902, LXXXI, 387–391; Kersten in *Int. Arch. f. Ethnogr.*, 1904, XVII, 1–75; Lafone-Quevedo in *Bol. Inst. Geogr. Argent.*, 1896, 1897; Schuller, *Sobre el Orijen de los Charruás* (Santiago, 1906); J. Remedi in *Bol. Inst. Geogr. Argent.*, 1896, and *An. de la Soc. Cientif. Argent.*, 1904.

50. **Miranhan.** See A. Mochi in *Arch. p. l'Antrop.*, 1902, XXXII, 437–541, 1903, XXXIII, 97–130; Koch-Grünberg in *Zeitschrift f. Ethnol.*, 1906, XXXVIII, 166–205, and *Zwei Jahre unter den Indianern* (Berlin, 1909–1910); Rivet in *Journ. de la Soc. d. Amér. de Paris*, 1911, n. s., VIII, 117–152. Rivet (p. 33) believes that the Miranha is "a very much modified and differentiated Tupi-Guarani dialect." Here, again, more evidence is needed.

51. **Mocoan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 191; Rivet in *l'Année Linguistique*, 1908–1910 [1912], IV, 126–128.

52. **Mosatenan.** See N. Armentia, *Los Indios Mosetenes y su Lengua* (Buenos Aires, 1903); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s.. VII, 192.

53. **Moviman.** See Chamberlain, ibid., 192.

54. **Muran.** See Chamberlain, ibid., 193. The Mura here listed is not to be confused with the Bolivian Mure, which Rivet believes related to Chapacuran.

55. **Ocoronan.** See Chamberlain, ibid., 193; Rivet, ibid., 1913, n. s., X, 122–123. Rivet is of opinion that the Ocoróna language (identical, probably, with Rocorona, Rocotona, Orocotona, Rotorõño) may belong in the Chapacuran family.

56. **Onan.** See Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 92–95.

57. **Otomacan.** See Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 194.

58. **Otuquian.** See Chamberlain, ibid.; G. de Créqui-Montfort and P. Rivet, ibid., 1912, n. s., IX, 317–337. These two authors, adducing further evidence from manuscript data of d'Orbigny, show the Covareca and Curuminaca to belong to the Otuquian stock, thus removing the Covarecan and Curuminacan from the list of independent linguistic families, and think that the Curaveca and the Curucaneca possibly belong also to the Otuquian.

59. **Paniquitan.** See H. Pittier de Fábrega in *Mem. Amer. Anthr. Assoc.*, 1907, I, 301–356; Beuchat and Rivet, *Affinités des Langues du Sud de la Colombie, etc.* (Louvain, 1910). Beuchat and Rivet consider Paniquita to belong to the Chibchan stock.

60. **Panoan.** See M. Navarro, *Vocabulario Castellano-Quichua-Pano*, etc. (Lima, 1903); von den Steinen, *Diccionario Sipibo* (Berlin, 1901); F. Hestermann in *Int. Amerik.-Kongr.*, 17te Tag., Wien, 1908 [1910], 645–650; Rivet in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 221–242; Mitre, *Catálogo*, II (1910), 316–317.

61. **Peban.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 195; Rivet, ibid., 1911, VIII, 173–206. According to Rivet, the languages of the Peban group are "much mixed and corrupted dialects of the Cariban stock"; this, however, awaits more proof. Rivet is right, however, in removing Yaguan from the list of independent stocks and making it a dialect of Peban. To the Peban group he also assigns Yameo.

62. **Piaroan.** See Ernst in *Amer. Anthr.*, 1895, VIII, 393–401; Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 195.

63. **Puelchean.** Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892); Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 458–460.

64. **Puinavian.** See Ernst in *Amer. Anthr.*, 1895, VIII, 393–401; Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 196.

65. **Puquinan.** See Brinton in *Proc. Amer. Philos. Soc.*, 1890, XXVIII, 242–248; R. de la Grasserie, *Langue Puquina* (Leipzig, 1894); J. T. Polo in *Bol. de la Soc. Geogr. de Lima*, 1901, X, 456; Chamberlain in *Amer. Anthr.*, 1910, n. s., XII, 417–419, and *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 196.

66. **Quechuan.** See Brinton, *Stud. in S. Amer. Nat. Lang.* (Phila., 1892), 52–58; Dorsey, *A Bibliography of the Anthropology of Peru* (Chicago, 1898); Middendorf, *Das Ruma Simi, oder die Keshua-Sprache* (Leipzig, 1890); v. Tschudi, *Organismus der Khetšua-Sprache* (Leipzig, 1884).

67. **Salivan.** See Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 197; R. R. Schuller in *Anthropos*, 1912, VII, 761–764. The manuscripts recently discovered at Madrid by Dr Schuller, and soon to be published, include an *Arte*, a *Doctrina Cristiana*, and a *Diccionario*.

68. **Samucan.** See Boggiani, *I Ciamacoco* (Roma, 1894); Brinton, *Ling. Cartogr. Chaco Region* (Phila., 1898); Huonder in *Globus*, 1902, LXXXI, 387–391; Kersten in *Int. Arch. f. Ethnogr.*, 1904, XVII, 1–75.

69. **Sanavironan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 198.

70. **Tacanan.** See Armentia, *Tacana*, etc. (La Plata, 1902); Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892), 7–21; A. Groeteken in *Anthropos*, 1907, II, 730–734.

71. **Tapuyan.** See Ehrenreich in *Ztschr. f. Ethnol.*, 1895, XXVII, 149 ff.; H. Gensch, ibid., 1908, XL, 744–759, also *Die Erziehung eines Indianer-Kindes* (Wien, 1908); v. Koenigswald in *Globus*, 1908, XCIII, 37–43; R. R. Schuller in *Int. Arch. f. Ethnogr.*, 1912, XXI, 78–98.

72. **Ticunan.** See Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 198; Rivet, ibid., 1912, n. s., IX, 83–110. Rivet (p. 87) considers Ticuna "a very corrupt dialect of Arawak."

73. **Timotean.** See Brinton, *Studies in S. Amer. Nat. Lang.* (Phila., 1892); Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 198.

74. **Trumaian.** See K. v. den Steinen, *Unter den Naturvölker Zentral-Brasiliens* (Berlin, 1894), 540–542; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 199.

75. **Tsonekan (Tehuelchean).** See Chamberlain in *Amer. Anthr.*, 1911, n. s., XIII, 460–464.

76. **Tupian.** See Adam, *Mat. p. servir à l'établ. d'une gramm. comp. des dialectes de la famille Tupi* (Paris, 1896); Brinton, *Ling. Cartogr. Chaco Region* (Phila., 1898); D. del Campana in *Arch. p. l'Antr.*, 1902, XXXII, 17–144, 283–289; H. D. Garraux, *Bibliographie Brésilienne* (Paris, 1898); H. v. Ihering, *The Anthropology of the State of S. Paulo, Brazil* (2d ed., S. Paulo, 1906); F. Pierini in *Anthropos*, 1908, III, 875–880; C. Tatevin, ibid., 905–915; A. do Valle Cabral, *Bibliographia da lingua tupi ou guaraní* (Rio de Janeiro, 1880); Rivet in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 149–178.

77. **Uitotan.** See Koch-Grünberg in *Ztschr. f. Ethnol.*, 1906, XXXVIII, 166–205; *Journ. de la Soc. d. Amér. de Paris*, 1906, n. s., III, 157–189; and *Zwei Jahre unter den Indianern* (Berlin, 1909–1910).

77a. **Uran.** See J. T. Polo in *Bol. de la Soc. Geogr. de Lima*, 1901, X, 445–482; Chamberlain in *Amer. Anthr.*, 1910, n. s., XII, 417–424.

78. **Yahganan.** See Chamberlain, ibid., 1911, n. s., XIII, 95–98.

79. **Yaruran.** See Tavera-Acosta, *En el Sur* (Ciudad-Bolivar, 1907); L. R. Oramas in *An. de la Univ. Central de Venez.* (Caracas), 1909, X, 144–155; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 201.

80. **Ypurinan (Hypurinan).** See Ehrenreich in *Ztschr. f. Ethnol.*, 1897, XXIX, 59–71; J. B. Steere in *Rep. U. S. Nat. Mus. 1901* [1903], 359–393; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 188.

81. **Yuncan.** See Middendorf, *Das Muchik oder die Chimu-Sprache* (Leipzig, 1892); v. Tschudi, *Organismus der Kechua-Sprache* (Leipzig, 1884); Dorsey, *Bibl. of the Anthr. of Peru* (Chicago, 1898).

82. **Yurucarean.** See Adam, *Principes et dictionnaire de la langue Yurucaré ou Yurujuré* (Paris, 1892); H. v. Holter in *Ztschr. f. Ethnol.*, 1877, IX, 105–115; Chamberlain in *Journ. de la Soc. d. Amér. de Paris*, 1910, n. s., VII, 201.

83. **Zaparan.** See Beuchat and Rivet in *Journ. de la Soc. d. Amér. de Paris*, 1908, n. s., V, 236–249.

LIST OF STOCKS SHOWN ON THE MAP

1. Alikulufan
2. Allentiacan
3. Andaquian
4. Apolistan
5. Araucanian
6. Arawakan
7. Ardan
8. Atacameñan
9. Aymaran
10. Barbacoan
11. Betoyan
12. Bororoan
13. Calchaquian
14. Cañarian
15. Canichanan
16. Carayan
17. Cariban
18. Caririan
19. Cayubaban
20. Changoan
21. Chapacuran
22. Charruan
23. Chavantean
24. Chibchan
25. Chiquitan
26. Chocoan
27. Cholonan
28. Chonoan
29. Coconucan
30. Corabecan
31. Cunan
32. Curucanecan
33. Enimagan
34. Esmeraldan
35. Goyatacan
36. Guahiban
37. Guaraunan
38. Guatoan
39. Guaycuruan
40. Itonaman
41. Itucalean
42. Jivaran
43. Jurian
44. Lecan
45. Lorenzan
46. Lulean
47. Mainan
48. Makuan
49. Matacan
50. Miranhan
51. Mocoan
52. Mosatenan
53. Moviman
54. Muran
55. Ocoronan
56. Onan
57. Otomacan
58. Otuquian
59. Paniquitan
60. Panoan
61. Peban
62. Piaroan
63. Puelchean
64. Puinavian
65. Puquinan
66. Quechuan
67. Salivan
68. Samucan
69. Sanavironan
70. Tacanan
71. Tapuyan
72. Ticunan
73. Timotean
74. Trumaian
75. Tsonekan
76. Tupian
77. Uitotan
77a. Uran
78. Yahganan
79. Yaruran
80. Ypurinan
81. Yuncan
82. Yurucarean
83. Zaparan

The accompanying map is modeled after the Powell map of North American stocks and aims to give a similar general conspectus of the distribution of families of speech. By reason of the large number of small stocks within the area now or formerly occupied by others, the real extent of such stocks as the Chibchan, Betoyan, Cariban, Arawakan, Tupian, Tapuyan, Aymaran, Quechuan, Panoan, etc., does not exactly appear as at the point of greatest expansion. In the Ecuador region, the Esmeraldan, Barbacoan, Quechuan, Cañarian, etc., do not exhaust the possibilities—several other stocks (perhaps, e. g., the Caran) may have existed in the region between the equator and S. lat. 5°. There is the likelihood of one or more other stocks having existed south of the Straits of Magellan; and the region of northwestern Brazil may yet furnish

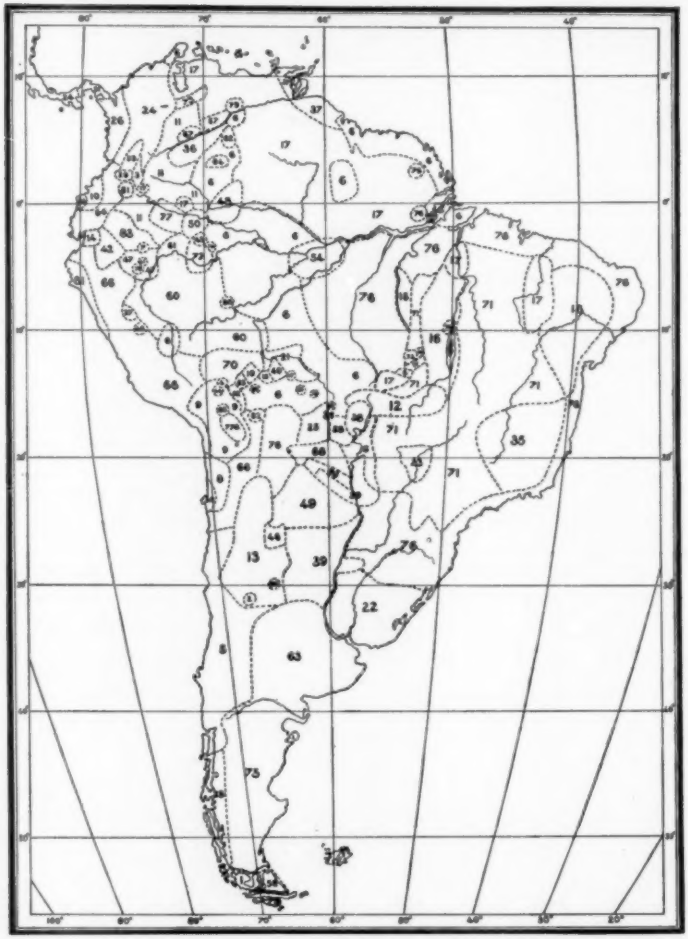


FIG. 47.—Map of South American linguistic stocks, by Alexander F. Chamberlain.

another or two. On the other hand, the crowded territory of the Colombia-Venezuela border and parts of Peru-Bolivia may see reductions by affiliation of some of the small stocks with one an-

other or with some of the larger stocks represented in this region or elsewhere. As the map shows only the mainland, and not the West Indian islands or the regions of Central America, the extensions in the form of the Arawakan and Cariban stocks, and in the latter of the Chibchan, are not indicated.

CLARK UNIVERSITY
WORCESTER, MASSACHUSETTS

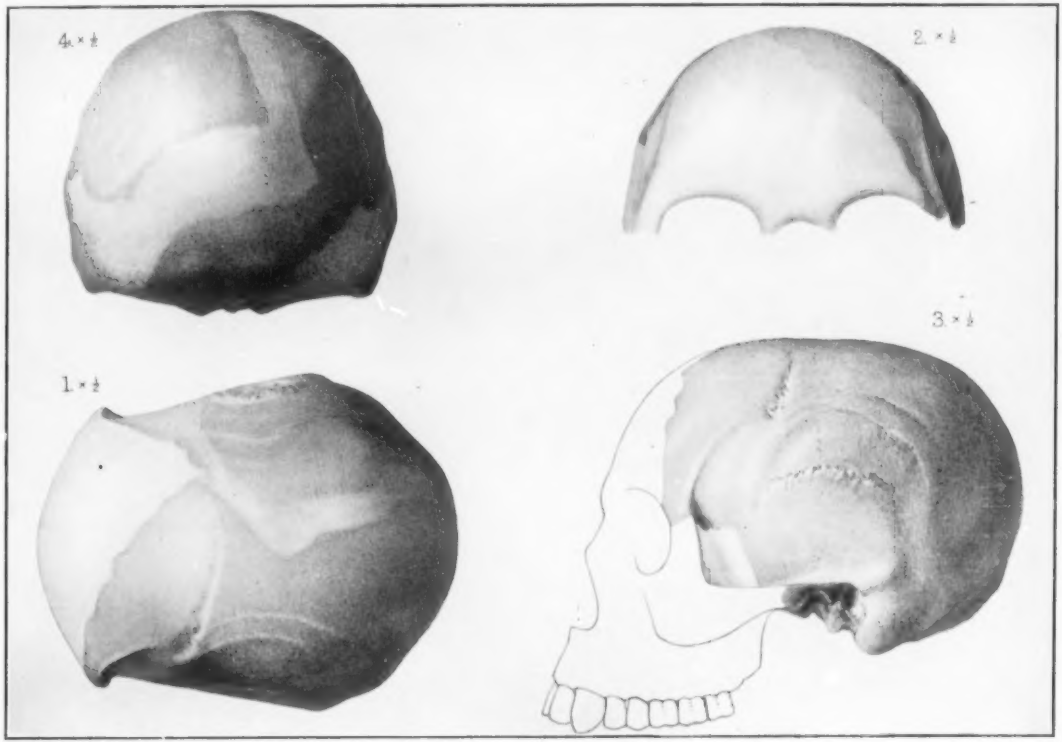
ANCESTOR HUNTING: THE SIGNIFICANCE OF THE PILTDOWN SKULL

By GEORGE GRANT MACCURDY

ARE we proud of our remote ancestors? Would they be willing to acknowledge us as lineal descendants? Be this as it may, we pay them, perhaps unwittingly, the high compliment of a perennial quest for their portraits, a quest which quite recently has taken us back, especially in England, much farther than that estimable institution, the College of Heraldry, had ever dreamed of going.

In many of its aspects the latest discovery is perhaps the most remarkable of all. When attending the International Congress of Prehistoric Anthropology and Archeology in Geneva last September I was given to understand that the next great event in the prehistoric field would be reported from the south of England. As the matter was being kept a profound secret there was nothing to do but to wait for details until official announcement should be made. This came at a meeting of the Geological Society in London on December 18.

Briefly the facts are these. Several years ago in passing up the Ouse valley from his home in Lewes (Sussex) into the Weald, Mr Charles Dawson, Fellow of the Society of Antiquaries and of the Geological Society, noted that the roadway had been mended recently with flints of a kind that he had not seen before in that region. These were traced to their source, which proved to be a pit near Piltdown Common, Fletching (Sussex). Nothing was found that day, but on a subsequent visit to the pit, one of the men handed to Mr Dawson a part of an "unusually thick human parietal bone." A portion of the frontal bone of the same skull including part of the left brow ridge was picked up by Mr Dawson himself in 1911 from one of the refuse heaps. He took this piece to Dr A. Smith Woodward of the Natural History Museum, Lon-



EOANTHROPUS DAWSONI FROM A GRAVEL PIT NEAR PILTDOWN COMMON, FLETCHING (SUSSEX). RESTORATION

After Dawson and Woodward, *Quar. Jour. Geol. Soc.*, LXIX, pl. XVIII, 1913.

don, who thereafter took part in the search. Other fragments of the skull were recovered from the refuse heaps; the right half of a lower jaw with first and second molars in situ was dug out of the undisturbed gravel by Mr Dawson. At precisely the same level, some four feet below the surface, and within a yard of the point where the jaw was found, Dr Woodward dug up a piece of the occipital bone of the cranium. By reason of their proximity as well as in point of size, the cranium and lower jaw may be "referred to the same individual without any hesitation." The bones are mineralized and stained to a ruddy-brown color, as are the sands and flints among which they were found.

The most diligent search has failed to reveal other parts of this human skeleton. But the finding of fossil animal remains in the same pit and stratum, both associated with rudely worked flints, makes Piltdown one of the most extraordinary prehistoric stations ever uncovered. The fossils include broken pieces of a molar of a Pliocene type of elephant, a cusp of the molar of a mastodon, and teeth of *Hippopotamus*, and *Castor*. On the surface of an adjacent field, they found the tooth of *Equus*, and fragments of an antler of *Cervus elaphus*. These were all in the same mineralized condition and of the same color as the human bones.

When the pieces of the cranium were put together it was possible to estimate the cranial capacity, which Dr A. Smith Woodward gives as not less than 1070 c.c. The bones are tough and hard, and the walls of the brain-case exceedingly thick, the average thickness of the frontal and parietal being at least one centimeter. The face and the greater part of the forehead are missing. The length of the cranium from glabella to inion is about 190 mm., while the greatest parietal width is 150 mm. The forehead is steeper and the brow ridge feebler than in the later Neandertal type. The cranium is low and broad, with a marked flatness on top, and the mastoid processes are relatively small.

The lower jaw is in some respects more primitive than the cranium. The horizontal ramus is rather slender, resembling in shape that of a young chimpanzee, especially in the region of the symphysis. Only two teeth, the first and second molars, were found,

and these were in their sockets. They are distinctly human, although relatively of large size and narrow, thus requiring more linear space for their setting in the jaw. Each has a fifth cusp. The crowns are worn flat by mastication, indicating that the canines were not so prominent as to interfere with essentially human proc-

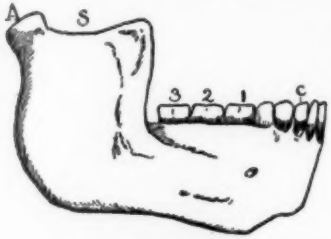


FIG. 1. Heidelberg man.

FIG. 2. Chimpanzee.

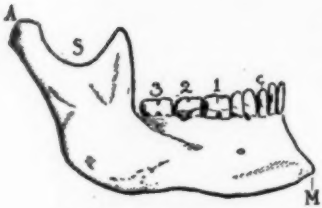


FIG. 3. Modern man.

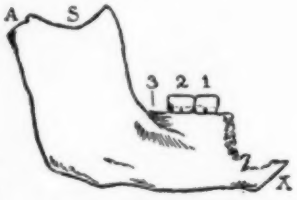
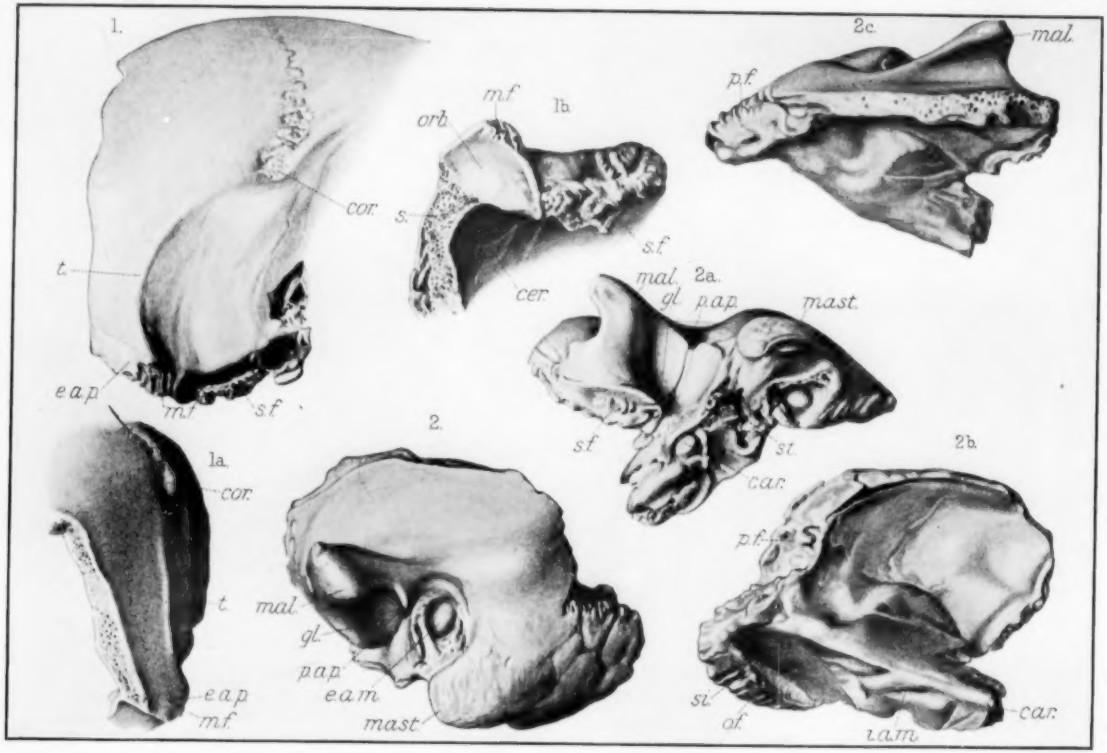


FIG. 4. Piltdown man.

FIG. 48.—*A*, Articular process or condyle (broken in the Piltdown jaw). *S*, Sigmoid notch. *c*, Canine tooth. 1, 2, 3, First, second, and third molars. (From a sketch by Sir Ray Lankester in *The Daily Telegraph*.)

esses of trituration; also that the individual was of adult age. The ascending ramus is broad, and the sigmoid notch at the top in front of the articular process is shallow. In these respects the Sussex lower jaw approaches that found near Heidelberg. The feeble brow ridges, the small area for the insertion of the temporal muscles, the rather insignificant mastoid processes, and the slender lower jaw point to a member of the female sex. Dr Woodward regards the skull as belonging to a hitherto unknown species of *Homo*, for which he proposes the name *Eoanthropus dawsoni*.

A study of the cast of the cranial cavity would seem to justify



EOANTHROPUS DAWSONI

Fig. 1. Frontal from left side; (1*a*) from the front and (1*b*) from below. *cer* = cerebral surface; *cor* = coronal suture; *e. a. p.*= external angular process; *m. f.*= facette for malar; *orb.*= roof of orbit; *s.*= broken section of frontal bone; *s. f.*=facette for sphenoid; *t.*= temporal ridge.

Fig. 2. Left temporal, lacking the upper part of the squamous wing, outer view; (2*a*) lower view, (2*b*) inner view, and (2*c*) upper view. *car.*= openings of carotid canal; *e. a. m.*= external auditory meatus, blocked by a pebble; *gl.*= glenoid fossa; *i. a. m.*= internal auditory meatus; *mal.*= process for malar; *mast.*= mastoid process; *o. f.*= suture for occipital; *p. a. p.*= post-articular process; *p. f.*= suture for parietal; *s. f.*= suture for sphenoid; *si.*= broad groove for lateral sinus; *st.*= base of styloid process. About two-thirds natural size. *Q. J. G. S.*, LXIX, pl. XIX, 1913.

the appellation. This has been done thoroughly by Professor G. Elliot Smith, one of the highest authorities on the human brain, who finds that while it bears a similarity to the brain-cases of Gibraltar and La Quina, both paleolithic and supposedly feminine, the Piltdown brain-case is smaller and more primitive in

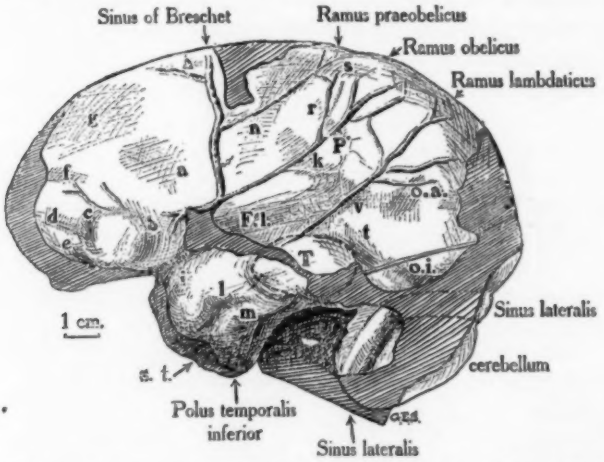


FIG. 49.—Left norma lateralis of the internal cast of the skull from Piltdown. The parallel shading shows the extent of the missing cranial wall. After Prof. G. Elliott Smith in *Q. J. G. S.*, LXIX, 1913.

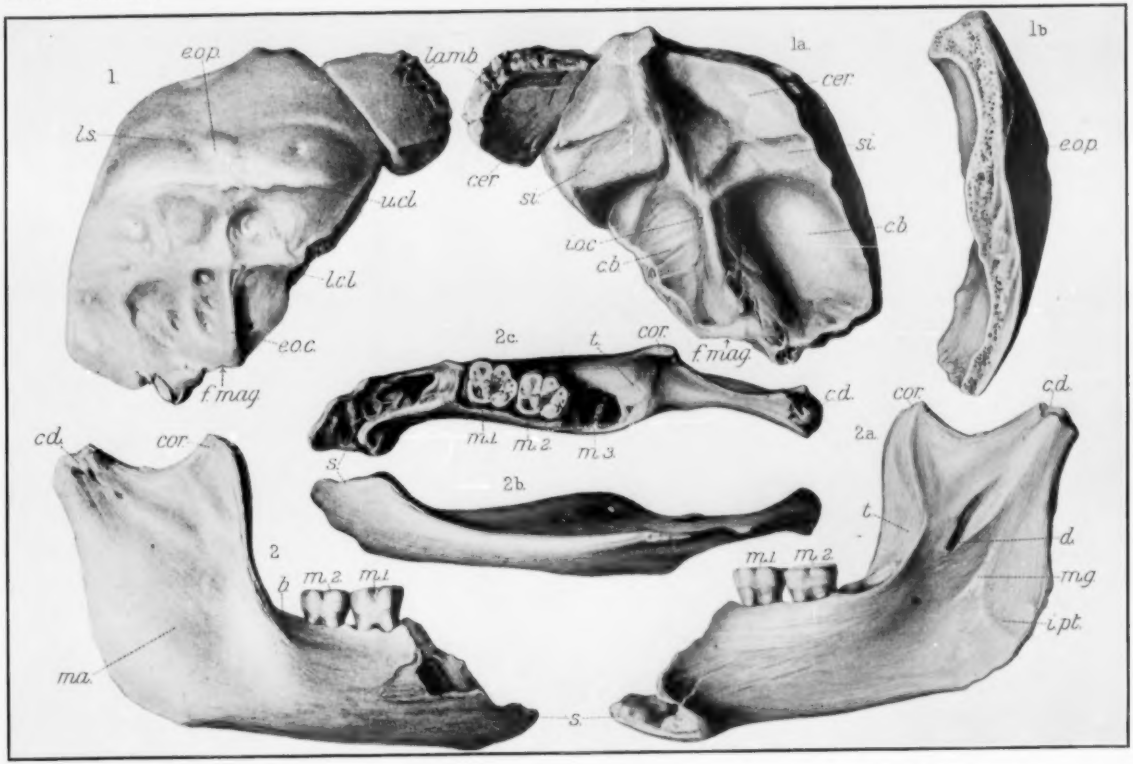
form than these. The most striking feature is the "pronounced gorilla-like drooping of the temporal region, due to the extreme narrowing of its posterior part, which causes a deep excavation of its under surface." This feeble development of that portion of the brain which is known to control the power of articulate speech is most significant. To Professor Smith the association of a simian jaw with a cranium more distinctly human is not surprising. The evolution of the human brain from the simian type involves a tripling of the superficial area of the cerebral cortex; and "this expansion was not like the mere growth of a muscle with exercise, but the gradual building-up of the most complex mechanism in existence. The growth of the brain preceded the refinement of the features and the somatic characters in general."

The associated worked flints have been compared with the so-called eoliths from the North and South Downs. According to Sir Ray Lankester, "many of the flints in this Piltdown gravel have been worked by early man into rough implements. They are of flat shape, often triangular in area and show a coarse but unmistakable flaking of human workmanship." He considers them ruder and earlier than any flint implements that can be rightly called Chellean.

Scientists have often remarked on the paucity of human remains that could with certainty be referred to a very early epoch, a condition which more than anything else has kept in check the science of prehistoric anthropology. After all there is no evidence quite so incontrovertible as the presence of man's own skeletal remains. We may justly differ on the question as to whether or not a given flint is an artifact; not so in case of a human skull. When the skull is found associated with rudely flaked flints the nature of which might be questioned if occurring alone, the burden of proof is at once shifted from those who believe them to have been utilized by man to those who would call them the work of Nature. On the other hand this does not by any means let down the bars to indiscriminate claims for the artifact nature of all primitive-looking flints. If a great majority of all the so-called eoliths or pre-Chellean types were thrown away, there would still be left enough to do business with, as the case of Piltdown proves.

Personally I have for years been a believer in the prehistoric possibilities of southern England because of the outcrops of flint-bearing Chalk stretching from Dorset and Sussex on the south to Caddington and the Cromer Forest Beds on the north.[1] Of all raw materials flint is perhaps the best suited to tempt nascent *Homo* to become a tool-user. It is the most utilizable of all stones, because of its hardness and mode of fracture, leaving a sharp, straight edge. Flint flakes can be produced by purely natural means. The accidental stepping on one of these would suffice, after repetition at least, to prove their efficiency. Thus the oldest and most primitive implements that have come down to us are utilized flint chips. Once the flint-using habit was formed, it spread; and when the

[1] *American Anthropologist*, vol. 7, p. 442, 1905.



EOANTHROPUS DAWSONI

Fig. 1. Imperfect occipital in outer view; (*1a*) inner view, and (*1b*) broken vertical section, left side. *cb.*= cerebellar fossa; *cer.*= cerebral fossa; *e. o. c.*=external occipital crest; *e. o. p.*= external occipital protuberance; *f. mag.*= foramen magnum; *i. o. c.*= internal occipital crest; *lamb.*= portion of lambdoid suture; *l. c. l.*= lower curved line; *l. s.*= linea suprema; *si.*= groove for lateral sinus; *u. c. l.*= upper curved line.

Fig. 2. Right mandibular ramus in outer view, imperfect at the symphysis; (*2a*) inner view, (*2b*) lower view, and (*2c*) upper view. *b.*= ridge below origin of buccinator muscle; *cd.*= neck of condyle; *cor.*= coronoid process; *d.*= inferior dental foramen; *i. pt.*= insertion of internal pterygoid muscle; *m. 1*, *m. 2* = first and second molars; *m. 3* = socket for third molar; *m. g.*= mylohyoid groove; *ma.*= insertion of masseter muscle; *s.*= incurved bony flange of symphysis; *t.*= insertion of temporal muscle. About two-thirds natural size. *Q. J. G. S.*, LXIX, pl. XX, 1913.

natural supply became scarce it was supplemented by artificially produced chips. The chief sources of flint are the chalk deposits of Cretaceous age that occur so plentifully in western Europe—as seen for example in the white cliffs along the southern coast of England. Approaching one of these cliffs, one finds it studded with parallel beds of flint nodules. Wherever flint occurs, stone-age relics are apt to be abundant.

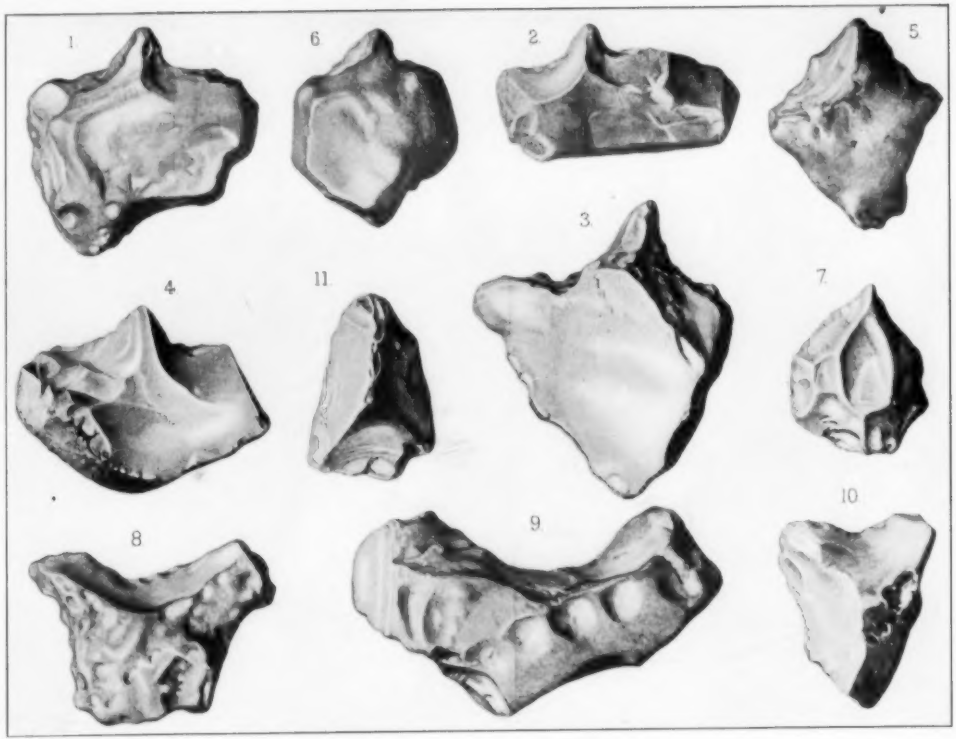
It is not generally known to Channel voyagers that the white cliffs at Beachy Head and again more than 50 miles farther east at Dover are the bases of a great anticlinal fold whose axis passes from Dungeness in a westerly direction through Hampshire. The crest of the fold which once towered high over what is now the Weald disappeared ages ago, leaving two slender tongues from the great Chalk plain of Dorset, Wiltshire, and Hampshire, the tip of one (the North Downs) being at Dover and that of the other (the South Downs) at Beachy Head. The scene of Dawson's epoch-making discovery is almost due north of Beachy Head, just beyond the South Downs plateau and hence near the southern limits of the Weald. The Ouse takes its rise in the Weald, flows southward, cutting through the South Downs and emptying into the Channel at New Haven.

The Piltdown gravels are 80 feet higher than, and nearly a mile distant from the present stream-bed of the Ouse. This signifies a great age for the deposit. While it may not be so old as the patches of red clay with rude flints on the Downs north of Ightham as well as on the South Downs at Beachy Head and Eastbourne, some at least of the materials composing it may once have been a part of older deposits. The broken edges of all the bones, human as well as animal, show more or less wear. The remains of the Pliocene elephant (*Stegodon*) and especially *Mastodon* are most worn, and are evidently derived from some older deposit as they are typical Pliocene forms. The teeth of *Hippopotamus* might be either upper Pliocene or Pleistocene; but the beaver teeth are probably Pleistocene. The gravel bed is probably early Pleistocene. That rude implements of the eolithic type were found associated with these human remains would seem to give to such implements a stand-

ing hitherto denied them by some authorities; unless it can be proved that they were derived from a deposit antedating that which originally contained the human remains. Their pedigree was needed in order to make industrial genealogy complete, just as the skull itself was needed to fill a gap in man's physical evolution. When the two sets of evidence are found intimately associated, they will serve as a solid basis for further advances in the domain of prehistoric anthropology. It remains for the geologists to determine whether in Piltdown the prehistorian's "Rosetta stone" has at last been found.

In the *Smithsonian Report* for 1909 (p. 581) I called attention to valley deposits as being the well-nigh inexhaustible storehouse of archeology; I was therefore prepared for such a striking confirmation as Piltdown affords. The one great drawback about valley deposit finds is that in the very nature of the case they must ever be in a large measure fortuitous. Cave deposits are so circumscribed that all one has to do is to find his cave and set his men to work. An expert can even afford to be on the spot almost continuously until the work is completed. On the other hand, untutored workmen are constantly digging in hundreds of sand, gravel, and clay pits over wide areas. Continuous expert control is out of the question without an international subsidy on a large scale. The result is that important data are overlooked and valuable specimens are smashed by pick and shovel and irretrievably lost to view. When by chance a find is made its authenticity is often open to grave question.

When the man of Sussex hunted in the valley of the Ouse was there an English Channel? The present Channel dates from the very close of the paleolithic. Raised beaches near Calais and on the south coast of England testify to the existence of an earlier channel, possibly during the Chellean epoch. At any rate the man of Sussex must have had neighbors to the south on what is now French soil. If there was no Channel the Ouse and the Somme were tributaries of the same large stream that flowed westward emptying into the Atlantic Ocean somewhere south of the Scilly islands, and the same race would have made common hunting ground of this great valley



EOLITHS FROM THE PILTDOWN GRAVEL BED

Figs. 4 and 5 are from Fairlight, near Hastings. Fig. 2 was found in the middle stratum. The borer and hollow scraper are the dominant types. After Dawson and Woodward in *Q. J. G. S.*, LXIX, 1913.

system, for in a gravel terrace at Abbeville, d'Ault du Mesnil years ago found remains of practically the same fauna; and in a very old high-level gravel terrace at Amiens, Commont has noted the presence of a rude pre-Chellean flint industry akin to that at Piltdown. We may therefore reasonably expect to find in the Somme valley the osseous remains of this old race.

In Spain, at Torralba, near the crest of the Sierra Ministra east of Madrid, the Marquis of Cerralbo has recently uncovered a very ancient camp site that has yielded a pre-Chellean and Chellean industry mingled with the bones of *Elephas* (*E. antiquus* and perhaps *E. meridionalis*), *Rhinoceros etruscus*, *Equus*, and *Cervus elaphus*. Both bones and implements occur so plentifully that the Marquis may yet be so fortunate as to turn out a human skull, for the site was not yet half exhausted on the occasion of my visit to Torralba last summer.

Twenty years elapsed between the finding of *Pithecanthropus* and *Eoanthropus*. During the intervening period only one discovery of human osseous remains approaching these in importance was made: the lower jaw from the Mauer sands near Heidelberg, found in 1907. It is too early to say just what ethnic relations existed among these three ancestral forms; they probably represent sections, not of one branch but of different branches of the same family tree. In point of age the Piltdown skull probably belongs to an intermediate stage. All three are older by far than *Homo neandertalensis*, which in turn is older than the artistically inclined cavemen who decorated their haunts with engravings and frescoes of their favorite game animals: the bison, horse, mammoth, and reindeer.

The form of the Heidelberg cranium can only be conjectured. The English scientists were more fortunate in that they recovered portions of both cranium and lower jaw. Comparing the parts in common, the Piltdown lower jaw is seen to be intermediate between the lower jaw of Heidelberg and that of a young chimpanzee. The height of the ascending ramus is somewhat greater, its breadth less, and the sigmoid notch deeper in *Eoanthropus* than in the specimen from Mauer. The ascending ramus is remarkable for the thickening of its antero-interior margin, thus affording

ample space for the insertion of the temporal muscle. The mylohyoid groove (m.g.) is behind rather than in line with the mandibular foramen. These and the complete absence of the mylohyoid ridge are characteristic of the apes rather than of man.

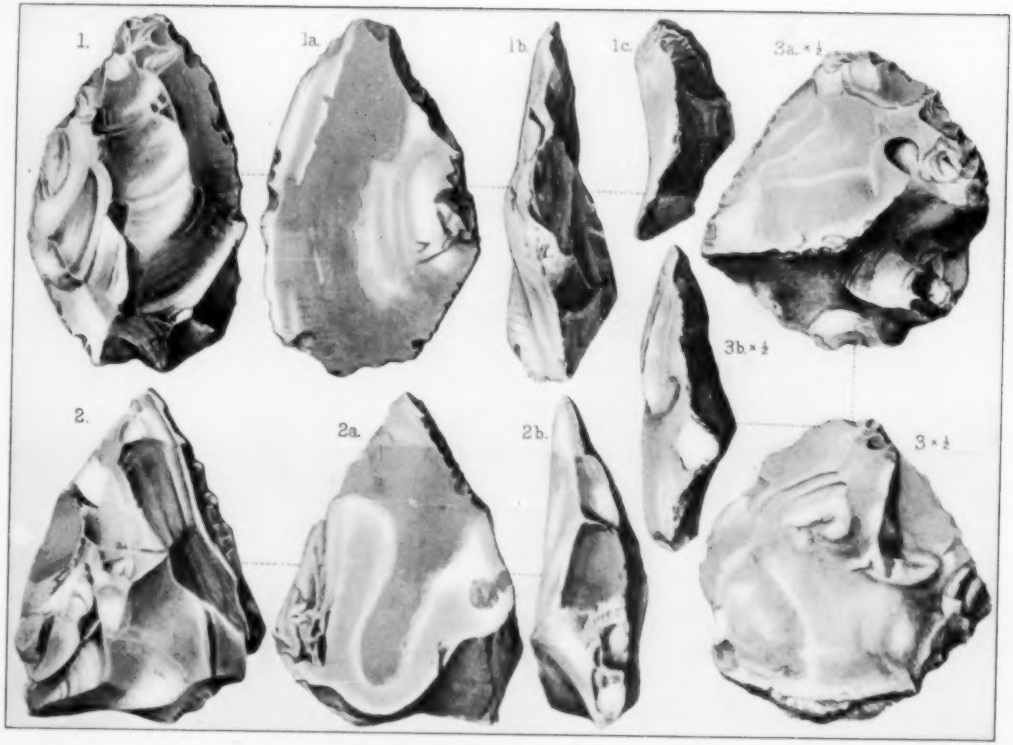
The transverse diameters of the first and second molars are less than in *Homo heidelbergensis*. While the antero-posterior diameters are identical in the two mandibles, the configuration of the horizontal ramus and the symphysis is such as to require a space of some 60 mm. for the setting of the anterior teeth in *Eoanthropus;* or 20 mm. more than in the Heidelberg mandible.

A comparison of the cranium with other ancient human skulls throws new light on the anatomical makeup of the earliest races of man. *Eoanthropus* has not the low sloping forehead and prominent brow ridge of even so late a type as Mousterian man; and yet according to Professor Elliott Smith its brain was the most primitive and most simian human brain thus far recorded. The Piltdown remains therefore tend to prove that in the lower Quaternary the differentiation among the Hominidæ had already progressed much farther than has been generally supposed; and that we shall have to go a long way back in the past to find the parting of the ways between the ancestor of man and that of his nearest of kin among the apes.

Mr Dawson and his associates are to be commended for the exercise of a diligent patience worthy of Darwin himself. The first piece was found about the time Schoetensack announced his discovery of the Heidelberg jaw. Mr Dawson simply kept quiet and continued his search for more evidence. Years elapsed between the finding of two pieces that would fit together, and only last summer were enough found to meet the requirements set for themselves by the discoverer and his associates. Thus have they quietly but none the less thoroughly built one more pier for the bridge that is to connect the present with the shores where the infancy of the race was cradled and its childhood played.

YALE UNIVERSITY MUSEUM
NEW HAVEN, CONNECTICUT

N. S., VOL. 15, PL. XI
AMERICAN ANTHROPOLOGIST



FLINT IMPLEMENTS OF RUDE CHELLEAN OR PRE-CHELLEAN FORMS

Fig. 2 came from a slightly higher stratum than the human and animal remains. After Dawson and Woodward in *Q. J. G. S.*, LXIX, 1913.

EXCAVATION OF A PREHISTORIC SITE AT TARRIN, DEPARTMENT OF THE HAUTES ALPES, FRANCE

By CHARLES PEABODY

THREE years ago, through the kindness of Mr Hippolyte Müller, librarian of the École de Médecine et de Pharmacie of Grenoble, the writer was informed of the existence of prehistoric sites in the Department of the Hautes Alpes, France. On inquiry of the informant of Mr Müller, Mr Paul Plat, the feasibility of excavation for a foreigner was established, and after a brief visit to the region in September, 1911, work was determined upon, and commenced October 22, 1912.

The exact site is at Tarrin, six kilometers west of the station "Eyguians-Orpierre" on the "Route des Alpes" of the Paris, Lyons, and Mediterranean Railway.

The village of Orpierre, three kilometers to the westward of the site of excavation, was the base of operations. This is a commune of the Department of the "Hautes Alpes" (capital Gap), and lies about 14 kilometers north of the departmental boundary line. This brings it at present about the same distance within the borders of Dauphiné, northward of the limits of Provence. Nevertheless the traditions and folk-lore of the people are very largely Provençal, the language of everyday life is Provençal, and there seems to be a lack of the eagerness to do away with a native speech, other than French, that strikes one in the Dordogne region. Nearly everyone can speak French, though with some accent; sermons and speeches are made in that language, though almanacs and newspapers in Provençal have some circulation. There is a noticeable absence of the enthusiastic manner and manners characteristic among us no less than among the French of the more southerly districts; also during my stay there was hardly any folk-song in a land otherwise peculiarly rich in folk-lore.

Mr Plat has put together some of the sayings and proverbs of

the country and it is hoped to publish them, partly in French and partly in Provençal, with annotations by the present writer, in the not very distant future.

There is no reason to suppose that in prehistoric times the region was not occupied by the long-headed, dark Mediterraneans, though in classical days the Celtic Vocontii were the inhabitants. These remained undisturbed by the Romans, and there seems to have been a continuous occupancy from then until now.

The Hautes Alpes is one of the most sparsely populated of the departments, and neither exports nor imports very much. The inhabitants, agriculturists, live to a great extent on the animals and produce they raise themselves, and it must be said that these are very good.

The native red wine is excellent, and the vintage, as it was my privilege to see it, an interesting occasion. Game is not plentiful, but there is some. Truffles are abundant and very highly appreciated; they are found by the help of dogs. The place of large shops is taken by the innumerable *foires*, especially abundant in the autumn. To these the farmers take their stock and wares, and numerous peddlers and agents may be seen going about from fair to fair—real "going-about bodies," as they are called in New England.

Geologically the region is largely of limestone formation, which has been in great part glaciated. The various lateral glaciers make an interesting and complicated study, which has been a large part of the life-work of Mr David Martin, curator at the new Departmental Museum at Gap.

Topographically, Tarrin rests on a bank to the south, about 10 meters above the bed of the Céans stream, a distance of about 150 meters. The Céans flows into the Buech near the Eyguians-Orpierre Railway station, and the Buech in turn into the Durance, famous in Hannibal's time, while the Durance flows through a broad valley southwest into the Rhône.

Tarrin lies at the foot of the Montagne de Chabre (1,311 meters) to the south, a ridge 14 kilometers long without a break, and Le Suillet, a much more picturesque and irregular range to the north (1,326 meters). The watershed to the west between the

Buech and the Rhône is formed by a ridge of more than 1,300 meters altitude, the nearest pass to the Rhône valley being the Col de Perty, about 15 kilometers from Orpierre. The altitude of Orpierre is 680 meters. The climate is temperate enough to attract a few summer visitors from Marseille, though it is little known to tourists

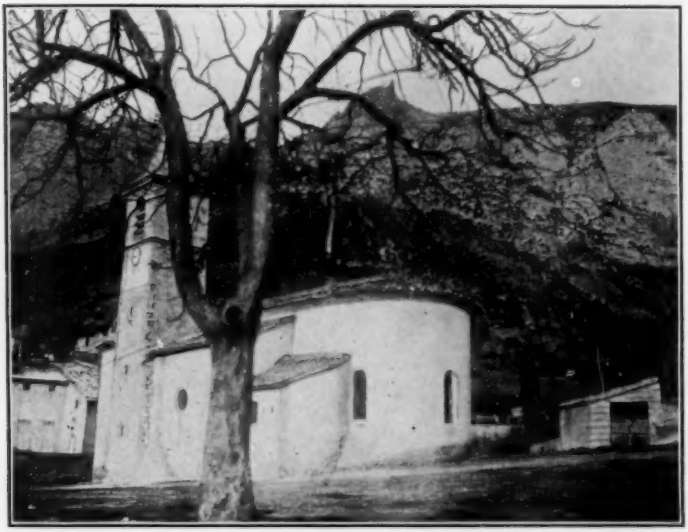


FIG. 50.—Church at Orpierre.

otherwise. The good roads of the department deserve more motor-travel.

The people are hospitable, and both Roman Catholics and Protestants made my stay one of a friend and comrade rather than that of a stranger. Particular acknowledgment of a formal character should here be made to my host of the inn, Mr Debeaux, and his son, to Mr and Mme Plat and their children, to the parish priest, the *pasteur* and the *réceveur*.

No obstacles were put in the way of excavation by a foreigner. In the light of recent circumstances in a department not very distant, it is somewhat remarkable that the French have left the

freedom of excavation to him who seriously wills—all honor to them. Work was carried on by a force of four men: Mr Plat; the owner of the particular farm, Mr Maigre; the latter's son, and a young man named Achard. The hours were short, as in November the days are short; work was discontinued on November 20. Of the thirty-one days, fifteen were freezing days (that is with a minimum temperature of zero Centigrade or below); the absolute minimum was − 4 on each of four days; rain fell on six days and snow on four; the latter reached a depth of three centimeters on November 15. This registered a cold fall for the region in spite of its latitude, 44.20. On October 28 we observed a solar fog halo, at half-past seven, opposite the sun; some colors were visible; this was for me a unique observation.

Tarrin slopes to the north, hence the ground was slow in softening in the morning, and the snow long in melting. The spectacle was presented of the entire opposite side of the valley to the summit of Le Suillet presenting an autumnal aspect,—clear of snow and retaining the brown leaves of the scrub-oaks,—while the immediate foreground looking toward the sun and the entire Chabre range were wintry and almost unbroken white.

The soil is of a clay resembling the "black waxy" of Texas and the "gumbo" and "buck-shot" of Mississippi, which makes excavation tedious and surface-hunting laborious. Add to this the probability of everything to be found being of minute dimensions, it will be seen why digging had to be so careful and progress so slow. The men used picks about half the size of an ordinary pick-ax; this could be wielded best with one hand. The two older men understood perfectly what we were in search of, and their quick eyes were far in advance of the slower sight of myself.

The ground selected for excavation is a natural ridge sloping down toward the Céans stream and is contained between two brooks, dry most of the time. The brook to the east is one meter 70 centimeters below the center stake of the excavation, and that to the west three meters 70 centimeters below the same point.

On the little plateau stakes were set out at intervals of two meters, and numbered during the course of the work, from north

to south: − 2, − 1, 0, 1, 2, 3, 4, 5; and from east to west, O, I, II, III, IV. Stakes 2 and II occupied the same spot (see the plan).

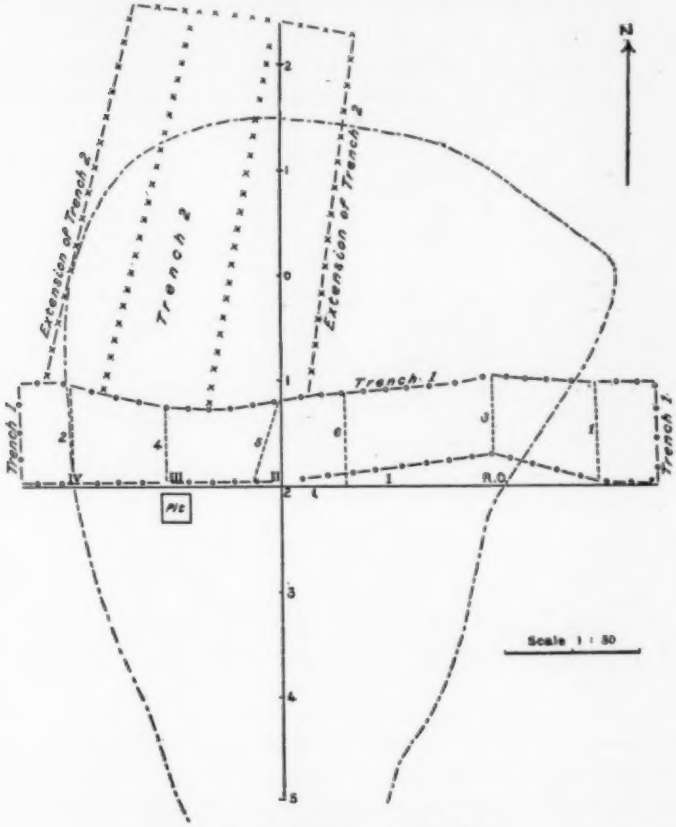


FIG. 51.—Plan of excavation at Tarrin.

But two trenches were cut in this ground: trench 1 from three meters east of Roman O to one meter west of IV, and trench 2 from a little south of the line of stake 2 north to one meter north of − 2. Trench I was from one meter and a half to two meters wide, and from one meter 25 centimeters to two meters deep.

Trench 2 was about two meters or less wide and from one meter 75 centimeters to two meters 30 centimeters deep.

Trench 2 was later extended by widening about one meter to the west and two meters to the east.

The greatest depths reached were west and south of stake 2—II, where, at a distance of three meters and 35 centimeters, the charcoal, which had been visible to within 10 centimeters, seemed definitely to disappear, and in a pit in trench 2, near the line of stake I. Here the accompanying cross-section was presented.

1	Yellow clay	90 centimeters.
2	Blue clay	1 meter.
3	Soft yellow clay	50 centimeters.
4	Hard blue clay	40 centimeters.
5	Soft yellow clay	50 centimeters.
6	Light-colored clay	50 centimeters.
7	Gravel	

No evidences of human occupancy were seen below the hard blue clay (4); the gravel is like that of the brook-bed at the site to the west, and not improbably the same as that of the larger Céans stream. This gravel is four meters 60 centimeters below the top of the higher bank of trench 2, and represents the greatest depth reached by the men with their primitive picks. Even the traces of roots, frequent enough in the upper strata, become infrequent after three meters' depth is reached.

The industry met with was much the same throughout. From near the surface to the depth at which human evidences ceased it seemed fairly homogeneous. Pottery, flint, pebbles whole and broken, animal bones, clay, hard earth, fragments of limestone and an arkose-like sandstone, and an abundance of charcoal were met at nearly all depths and places. Many of the stones and their fragments, a small proportion of the chipped flints, and numerous masses of burnt clay testify to the action of fire. In one case the limestone has been so altered and cracked that the degree of heat must have been great.

Even localization of the industry was not easy. There was comparatively little in the eastern end of trench 1, and there were

comparatively many animal bones at the extreme northern end of trench 2. There was absolutely no indication of progression of industry through stratification, nor even of length or succession of occupancies.

For a space of about one-meter radius from stake III, on the line of stake 2, reaching to a depth of one meter and a half, there were found more remains indicating man than anywhere else in a

FIG. 52.—Trench 1, looking west.

similar area. There were also two rude horizontal strata of pebbles, or small bowlders, which gave us some justification for the title "Fond de Cabane." This we denominated No. 1, while a somewhat similar appearance at the extreme northern end of trench 2 we called "Fond de Cabane 2."

Nearly under stake III, on the line of stake 2, and again at one meter west of stake III and one meter north of stake 1 were pockets or deposits of sand differentiating themselves sharply from the compact clay of the remainder of the digging. These may be of

water formation; charcoal and other remains of man's work may readily have trickled in from the side.

Of course the whole bank is of comparatively recent geological formation. Much of it must be a talus or wash from the mountain to the south whose upper few hundred feet are a precipice of entirely naked rock. It is not unlikely that even the two brooks at either side of the excavation were not in existence at the time most of the prehistoric inhabitants were there. Notwithstanding the many chances of disturbance and the complete absence of archeological or geological stratigraphy, it is not likely that any culture later than the neolithic had anything to do with the interior deposits.

On the surface were large quantities of glass, probably Roman, and some bronze. As we did not find these beneath the surface, it is not unreasonable to suppose that what we did find was earlier and fairly well in place.

The results of the digging in pottery, flint, and bone may be briefly commented on and then summarized.

Pottery.—No complete vase was found; not even two or more pieces that could with certainty be attributed to the same vase.

At an excavation carried on previously by Dr de Vésignié and Mr Plat, a short distance to the southeast, a number of fragments belonging to a single vase were found; it is to the writer a case of maximum fracturing of pottery. Not only were our fragments unrelated to each other, but they are small; the maximum length is 10 centimeters and the maximum thickness 14 millimeters. With the exception of a single fragment, which carries a rude finger-nail jabbing, the pottery is undecorated as to line, form, or paint. Of course paint may have been used and washed away; but at least 99 per cent. never had any.

A few of the vases had a ridge, possibly of service for suspension, extending along the outside at about the same position as the placing of the handles. When present at all, the handles are almost exclusively of the conical nipple-shape; a number bear vertical perforation. (This will interest Dr Guebhard.[1]) One of the vertically perforated handles has a double perforation. There are two instances of horizontal perforation.

[1] Cf. *Mém. Soc. Preh. Française*, II, 1, 1912, Sur L'Anse Funiculaire.

VARIOUS TYPES OF PROJECTILE POINTS FROM TARRIN

a, *b*, *c*, *d*, *e*, *g*, from the surface; *f*, *h*, *i*, *j*, from beneath the surface. *d* is 32 mm. in length.

The form of the vases, so far as can be surely made out, was generally bowl-shaped. There seem to be a few square corners, as of some plate or angularly formed object.

The pottery from beneath the surface was in a poor state of preservation. That from the surface is much harder; in spite of this the anomaly presents itself of the overwhelming proportion of the fragments found being from beneath the surface. Indeed not more than 10 per cent. is surface material, while in the case of the flints the proportion is very much the other way.

Owing to long burial in the damp ground many of the fragments are covered by an incrustation which completely hides the clay and at times attains a thickness of three millimeters.

The tempering is very abundant and obvious; it seems to be composed practically entirely of minute crystals of calcite. As the calcite is more resistant than the clay, in many instances the fragments present a rough, grater-like surface.[1] Calcite is found in some abundance on the surface; whether naturally or artificially it would be difficult to say.

Two types of pottery may be distinguished: the thicker, rougher variety, and a thinner, smoother kind; these, however, tend to blend into each other.

Flint.—Of the fragments of flint in the collection from Tarrin and its immediate vicinity, from on and under the surface, about 25 per cent. only comes from beneath.

The whole industry is distinguished by what may be termed "the way of least resistance." A proportion so small as almost to be negligible is composed of finely chipped, complete points, scrapers, knives, and perforators, such as one would expect to find on a neolithic site. The number of rough chips and masses is enormous, yet of these the examples that bear some sign of use, retouching, or secondary chipping are very numerous.

There are a few well-chipped arrowpoints and other small implements both from under the surface and upon it. Until the excavations of last fall, no chipped point had been found there

[1] The identification was kindly made by Professor C. Palache of Harvard University.

beneath the surface, but a sufficient number of such chipped forms were found to show that the inhabitants could and did make them when desired—it was not a lack of knowledge or skill, but simply a lack of the necessity for labor that accounts for the rude character of the whole industry.

When a chip or rough mass would serve the purpose of an implement, it was undoubtedly used forthwith. In the case of projectile points the results of such use would hardly be apparent on the flint; in scrapers of the *grattoir* type (those with the scraping edge at right angles to the axis of the lower arm) in most cases some fine chipping would be apparent, though in other instances the form of the piece of flint alone would include it in the scraper class. The *grattoir* is the type represented by the great majority of American aboriginal scrapers.

In the case of the *racloir* type (where the scraping edge is parallel with the axis of the lower arm) marks of use are practically necessary to distinguish them from flakes used or to be used as knives.

A number of scrapers of both types have a circular scraping edge (small spokeshaves or *encoches*); often this is also only a result of use.

A number of fine, thin flakes have been classified as knives, where their use as such was fairly to be assumed.

Perforators were proportionally very numerous. In some cases the point is finely chipped on one side for a few millimeters. The inhabitants took as much care in the manufacture of their perforators as they went without in fashioning their arrowpoints.

Besides perforators of the ordinary type, differing little from the corresponding American forms, there is a long series of "gravers" or "burins" with the stubby point characteristic of the Magdalenian burin. Not even in the latter case is secondary chipping at the point necessary to the recognition of the implement. It is needless to say that there is nothing paleolithic about the burins from Tarrin.

So far as the writer is aware, there are no paleolithic sites in the department, or even in the neighborhood. The ingenuity of the flint-knapper of neolithic times at Tarrin was largely transferred to the manufacture of fine, long blades of the finer varieties of flint.

THREE GRATTOIRS, ONE RACLOIR, AND TWO KNIVES FROM TARRIN

a, *b*, *c*, *d*, *e*, from the surface; *f*, from beneath the surface. *d* is 68 mm. in length.

Of these blades (*lames*) hundreds of fragments exist. It is impossible to suggest uses for them; whether, when hafted, they may be useful as knives, hooks, currying tools, or harpoons, is a more or less futile inquiry. With two, three, or four longitudinal planes, the fragments, especially when looked through toward the filtering light, are exceedingly beautiful—to us, though hardly to their neolithic manufacturers, they justify their own existence.

How small some of the fragments are may be seen; in a box containing one hundred and fifty of them they range upward from a length of 9 millimeters and a width of 6 millimeters. There is one fragment in two planes measuring 23 millimeters by 17 millimeters with a thickness of the median ridge at the break of only 1.5 millimeter.

As might be expected, nuclei are abundant and good. Many of them would make excellent sling-stones, but this is a use which one hesitates to assume. Also a number of them may be *grattoirs Tarté.*

The flint from which the implements were made is of many appearances. The dark or black variety is probably from the slopes of the mountain above, where it occurs amalgamated with the limestone in considerable quantities. A number of interesting nuclei have as a base the native limestone.

The white, brown, pink, and yellow flints are mostly imported, and some of them may have come from the Department of Vaucluse, by way of that of the Basses Alpes.

Fifty fragments at random give the following:

Dark flint	11
Dark gray	15
Light gray	5
Pink	4
Yellowish white	15
	50

Some localities, for example, on a terrace a few decameters to the east, provided a larger proportion of native, dark, unpatinated flint than others where the greatest variety of color and patination could be observed. The latter may be white, pink, or blue, with all grades of stippling and dappling.

The present discussion as to patination leads one to keep silence failing further and very far-reaching experiments. It is, however, highly probable that both under and upon the surface patination goes on; that it is an uncertain index of age, and that by reason of wash and rains the most capricious results on similar materials and in spots of very limited area may be expected.[1]

Upon and under the surface were a great many small fragments of polished neolithic celts; but not one whole polished neolithic implement was found beneath the surface; the breaking was so constant as to suggest a purpose.

Animal Bones.—Through the kindness of Dr Glover M. Allen, of the Museum of Comparative Zoology, Harvard University, the following animal bones have been identified:

Helix hortensis.
Helix (*Tachea*) *nemoralis* (?).
Sus scrofa, wild or domestic.
Bos taurus, or its wild ancestor the *Aurochs.*
Capra hircus.
Ovis aries (?).
Cervus elaphus.
Bison bonasus.

Ox-bones are particularly numerous, possibly on account of their large size. Game is surprisingly absent.

The finding of the European bison is surprising; one tooth apparently of this animal was found near "Fond de Cabane 1" at a depth of 1 meter 50 centimeters.

Minute snail-shells from the trenches were identified by Mr Martin on the ground as those of *Succinea pfeifferi.*

With the exception of the bison no faunal species not now native to the region were found, though some differences of relative frequency could be observed.

The following classification, especially in the case of the flints, is quite arbitrary. Few of the points have any secondary chipping,

[1] Dr David Martin, of the Musée Départemental at Gap, has observed limestone differently patinated according to the stratum in which it has been held; cf. also Dr Allen Sturge's articles in *Proc. Prehist. Soc. East Anglia*, 1908–1909, and 1909–1910, I, 1, pp. 43 ff.

THREE PERFORATORS AND FIVE FRAGMENTS OF BLADES

a, *b*, *c*, from the surface; *d*, *e*, *f*, *g*, *h*, from beneath the surface. *a* is 32 mm. in length.

yet it seemed impossible to classify them as mere chips, and if they are not such the only alternative is to put them under the heading of their supposititious use.

Apropos of the use of unretouched points I was informed that a brother of the Dr de Vésignié who had excavated at Tarrin discovered at the Grotte de Sigottier, Hautes Alpes, a human femur containing a broken point without retouching. On my writing to Captain de Vésignié for information and permission to use it, I received a most courteous letter giving very full details. The fragment of the point he describes as follows:

> Il est certain que la pointe en silex d'où provient l'éclat resté dans l'os n'était pas une pointe bien travaillée, comme la plupart de celles qui constituaient le mobilier de la grotte. D'autre part la forme ovalaire de la section de cassure ne semble pas indiquer une pointe absolument fruste et sans retouches.

An instance among the flints found at Tarrin presents a flake in the form of a point, with a few millimeters of secondary chipping. With the intermediate steps thus represented, albeit sparsely, it is not unreasonable to classify a certain number of unretouched flints as points, for lack of anything better to do with them.

A few meters to the southeast of the larger excavation, a trial excavation was made, known in distinction to the former (Excavation 1) as Excavation 2. Not very much was found here.

That a general rule of its being advisable to dig, other things equal, where the surface finds are numerous may be proven, the specimens found on the ground on the plateau excavated have been listed separately. The rest of the classification explains itself.

There was also found in trench 2, at a depth of 2.30 meters, a fragment of what appears to have been a limestone bracelet. The nearest analogy to this that I could find at St. Germain is of date later than the neolithic; if the fragment is of like date, it would indicate much disturbing of the soil.

Pottery Fragments from the Tarrin Excavations

	RIMS	HANDLES	RIDGES	BASES	OTHER	TOTAL	THIN WARE
INTERIOR							
Excavation 1.....	83	30	30	2	803	948	64
Excavation 2.....	0	0	1	1	10	12	0
Total interior.....	83	30	31	3	813	960	64
SURFACE							
Excavation 1.....	2	1	0	0	48	51	
Surface in general .	4	1	0	2	29	36	2
Total surface.....	6	2	0	2	77	87	
Grand total.....	89	32	31	5	890	1,047	

Flints Found Under the Surface

	TRENCH 1	TRENCH 2	FOND DE CABANE 1	TOTAL
POINTS, sharp.....	4	3	2	9
Dull.....	2	3	2	7
Leaf-shaped.....	0	3	3	6
Sides more or less straight.....	0	0	0	0
Tanged.....	1	1	0	2
Unclassified.....	0	1	0	1
Total.....	7	11	7	25
"GRATTOIRS," high, or "CARÉNÉS"..	0	2	0	2
Long, blunt.....	0	1	0	1
Tanged.....	0	0	1	1
Unclassified.....	3	5	0	8
Total.....	3	8	1	12
"RACLOIRS," simple.....	1	1	0	2
Double.....	0	2	0	2
Total.....	1	3	0	4
Round flakes (suitable for scrapers)..	3	4	5	12
Perforators.....	1	1	0	2
Fragments of blades.....	10	18	12	40
Masses and chips.....	98	190	92	380
Nuclei.....	4	4	4	12
Fragments of celt.....	4	7	5	16
Knives (flakes).....	0	4	5	9
Saw (?).....	0	2	0	2

Flints Found under the Surface—Continued

	TRENCH 1	TRENCH 2	FOND DE CABANE 1	TOTAL
ADDITIONAL				
Paint-stones	1	2	2	5
Hammer-stones	2	1	0	3
Quartz	1	0	0	1
Chalk	0	0	1	1

Flints Found on the Surface

	EXCAVATION 1	GENERAL	TOTAL
POINTS, with one edge bulging	0	27	27
Oval	0	3	3
Leaf-shaped	1	4	5
Sides more or less straight	0	17	17
Tanged	2	13	15
Round in section	0	12	12
Unclassified	12	22	34
Total	15	98	113
GRATTOIRS, high	0	7	7
Carénés	0	5	5
Long and blunt	0	9	9
Flat	0	34	34
Encoche	0	6	6
Triangular	1	4	5
Tanged	0	8	8
Unclassified	1	16	17
Total	2	89	91
RACLOIRS, simple	3	12	15
Double	2	2	4
Oblong with a scraping edge all round	0	3	3
Encoche	0	1	1
Tangée	0	4	4
Unclassified	0	5	5
Total	5	27	32
GRATTOIRS-RACLOIRS	0	2	2
PERFORATORS, ordinary	2	46	48
Perforators, ordinary	0	6	6
Winged (?)	0	1	1
Flattened back	0	1	1
Gravers	2	18	20
Unclassified	2	8	10
Total perforators	6	80	86

Flints Found on the Surface—Continued

	EXCAVATION 1	GENERAL	TOTAL
Blades, fragments	16	180	196
Blades with encoche	0	10	10
Total	16	190	206
Masses and chips	193	1,176	1,369
Ditto, small	0	160	160
Total chips	193	1,336	1,529
Nuclei	5	92	97
Sickle-shapes	0	1	3
Knives	0	3	1
Fragments of diorite celts	13	41	54

As a whole, then, judging from the work of Mr Plat and Dr de Vésignié previous to our own, and from what we found, Tarrin seems to have been a site for a more or less constant occupancy in neolithic times. The inhabitants were quiet rather than hunters, and possibly may be designated as a grazing people.

There must have been many inhabitants, for the slopes of the mountains up to an altitude of 1,000 meters carry the flints and bone fragments of these prehistoric peoples.

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THE SOCIAL POSITION OF MEN AND WOMEN AMONG THE NATIVES OF EAST MALEKULA, NEW HEBRIDES

By GERDA SEBBELOV

THE following information regarding some interesting phases of social life in East Malekula was received from Rev. F. H. L. Paton during a recent visit. Mr Paton, who was born in the New Hebrides, has devoted most of his life to intelligent and valuable missionary work among the natives of these islands, and through his sympathetic interest and intelligent understanding he has accumulated a detailed knowledge of the culture and customs of the people among whom he has worked.

For a man in Malekula, caste is a very important thing. Both religious life and social position are inextricably bound up with it; and as a man's caste depends upon the number of large tusk-pigs he has killed at the sacred ceremonies, tusk-pigs come to play a prominent part in each man's life.

A child is born without caste. Immediately after birth at least one large pig is killed, and a feast is held at which conch-shells are blown, calling the attention of the ancestral spirits to the occasion and invoking their blessing. Then a name is given to the child. The name may be an old family name, or may have reference to some recent event, as Reman Nech, Laughing Fish, which owed its origin to a nightmare experienced by the father. When the child is one month old, the mother takes it down for its first swim. All the women relatives attend, and the occasion becomes a feast for mother and baby. The child is taken into the sea and bathed. Afterward it is placed in a tiny canoe made for this special purpose, and a small paddle is put in its hand. The ceremony is an invocation to the deity and the ancestral spirits asking their protection in canoeing and swimming during the years to come. If the baby is a boy it is then taken ashore and a small bow and arrow are held to its fingers. A male relation is the target, and if the tiny arrow

hits the mark, the infant will become a great warrior, while if it misses it will become adept in dodging the arrows of the enemy.

All this while, however, the boy has no rank or caste, and it is not until his father kills a tusk-pig at one of the sacred ceremonies, Mangke or Nahonan Pwin Pwin, or at a dead man's grave, that the child becomes of any importance. This may happen shortly after birth, or it may be deferred till he is twelve, thirteen, or fourteen years of age. But as soon as a tusk-pig has been killed for him at a ceremony, he becomes a Merib. Hitherto he has eaten with the women and casteless ones; now he can eat only with those of his own caste, and his name is changed. The pig is killed for the men of the caste the boy is going to enter; they eat its flesh, and several smaller pigs are usually furnished so as to eke out the feast. The spirit of the pig goes to the dead men of the caste the boy enters.

As each large tusk-pig is killed the boy rises in rank. The castes are six in number. Only very few people reach the fifth rank, which is the rank of the chiefs; but should two or more men reach this rank they are of equal importance, unless one of them has other favorable qualities, such as being a good song-maker, or being a good tradesman, or particularly clever. He then will rank as high chief.

The names of the castes are: (1) Merib; (2) Dang-ov, two grades; (3) Barang, ten grades; (4) Gurn Gurn, ten grades; (5) Namar, ten or more grades; (6) Mara, high chief.

Each caste is again graded. Dang-ov has two grades, and a pig has to be killed at the entrance into each. Barang has ten grades and demands an equal number of pigs, and so on until the honor of Mara, or high chief, is reached. The men of each caste eat together. A woman may cook the food for men of rank, but she may not take it off the fire, nor must she touch it after it is cooked; neither can she eat of it, not even of the scraps which the men have left. Each caste has its own fire, and Mr Paton relates that one evening he saw a woman who had cooked three meals for her husband and two sons of different rank lean back and declare that she was too tired to prepare anything for herself: she would eat nothing till the next day. If a man of lower caste eats of the

food belonging to the caste above, all men belonging to the higher caste must kill a pig. A man of rank must not be touched on the head; if a man of lower rank touches one of higher caste on the head, trouble will ensue. If a man breaks the rules of his caste he must kill a pig before he can again assume his rights; as, for instance, if a man eats with men who are not of his own rank. No man of caste will eat a female pig.

As social position and finally chieftainship depend on caste, and caste depends on the number of pigs killed, this grading seems to become a strong incentive to thrift. A chief's son, being the son of a man with many tusk-pigs, will probably rise in rank much more quickly than a poor man's son, but any man can acquire tusk-pigs through thrift and care. He can trade for tusk-pigs, he can work to acquire them, and a song-maker, of whom we shall hear more, receives his pay in them. In this manner a premium is really set on thrift, and the basis seems to be entirely democratic.

The ceremonies at which men may kill pigs and rise in rank are: (1) Mangke, (2) Nahonan Pwin Pwin, (3) At a man's grave. Only one grade can be acquired at a time, but the Mangke and Nahonan Pwin Pwin ceremonies last for several weeks, during which time several pigs might be killed, admitting the killer to a new rank each time. One grade at a time, however, is the most usual. At the entrance into each new rank the man changes name, so a man may have from eight to ten names during his lifetime.

Each village has a Mangke ground. In a sheltered spot of this ground two or three lodges are built, one for the Meribs and casteless ones, one for the Barangs, and one for the chiefs. In these lodges ceremonial implements, such as the *ndétér*, or ax for killing pigs, are kept. Sometimes the chief is the only person in the tribe who owns a *ndétér;* he then lends it to the others.

A Mangke can be held any time a sufficient number of men want to rise in rank and have a sufficient number of pigs to kill. Sometimes a Mangke may be only for chiefs; then they alone kill pigs. Other Mangkes may be for Barangs exclusively, and later one may be held for the next rank. Sometimes when the number of aspirants for rank is small, different tribes combine for the festivity; then

Meribs kill pigs one day, Barangs another, and so forth. Each tribe makes the most elaborate ceremony of which it is capable. Pigs are killed, conch-shells are blown to call the ancestral spirits to the feast, songs are sung, and dances that last all night are performed.

The dances are mostly dramatic performances. The natives have some set dances, but each tribe strives to have a new dance to introduce at each feast. Recent events, such as fights, elopements, or accidents, are taken up and dramatized. In these dances the performers sometimes ridicule persons in a way that leads to disastrous consequences. Thus, in one instance an elopement had failed, and when the topic was taken up at a Mangke, the man concerned killed the song-maker. The participants are thoroughly trained for the dances. The training is usually supervised by the song-maker, who creates the new dances and instructs the performers. A song-maker is considered a great man, and it is the natives' desire to vary their performances as much as possible. During the dances the men are smeared with soot and cocoanut oil; they wear head-dresses of sticks and spiderweb, and use masks of animals or anything that will further the representation. The dances are tribal rather than by separate castes. A great many visitors attend, and these freely express their opinion of the manner in which a dance is conducted and as to the importance of the feast. Drums of bamboo and wood are used during the dances. The rhythm of their songs is usually good, while the tune is poor.

When a man dies who is either a Barang or belongs to a higher caste, a special ceremony and an all-night dance are held for him. Immediately after death a stick is put in his right hand, and the body is wrapped in a mat so as to leave exposed only the hand and the stick. The stick is symbolic of a killed pig. At the grave tusk-pigs may be killed in order that men should rise in rank. Sometimes one tusk-pig is thrown into the grave of the dead man. He is then supposed to go to the spirit-land driving the soul of the dead pig before him as an entrance fee. The ceremony is held thirty days after the death, and if the man was prominent it may be repeated at intervals until the hundredth day after death.

Pigs are sacrificed, general mourning songs as well as songs praising his virtues are sung, and all-night dances are performed. These ceremonies are regarded as farewell parties and as helping to send the dead in proper fashion to the next world, where his ancestors live. The people of East Malekula believe in the immortality of the soul, which they conceive of as a vague, shadowy thing.

Mr Paton's knowledge of the life of the women was not so definite as his knowledge of the life of the men. He knew that they, too, had castes, but not whether these castes had names or definite rules. He knew that a man without caste could eat with a woman of caste; however, he said that women of high rank ate by themselves. He did not know whether the women changed names when they changed caste. Nevertheless, with all its deficiencies, the following material is interesting and suggestive of investigations needed in the field.

At the birth of a girl conch-shells are blown, a tusk-pig is killed, and a name is given as at the birth of a boy. That is to say, this takes place if the child is to be kept, for it sometimes happens that a father thinks he has too many daughters and throws away the baby. This happened to a girl who was later called Thrown-Away. After having thrown the child out, the father departed for a sacred ceremony and the mother saved the little one, who at the father's return pleased him so much with her bright eyes that he decided to keep her. If the mother dies shortly after a baby is born and no one is found willing to nurse it, it is thrown into the grave with the mother.

The girl, like the boy, goes through the swimming and canoeing ceremony, after which she is taken ashore. A piece of matting made from the inside of the pandanus leaf is brought, and her baby fingers are helped to weave a few strands in order that she may become a proficient weaver in days to come. The baby girl is kept mostly with her mother and sister, though boys and men make good nurses. The women carry their babies on their backs or at their sides in mats six to seven feet long. The little one sits in the mat with the arms round the mother's neck and the legs sticking out at either side. When a girl grows a little older she plays with dolls

made of stone or banana stalks. She plays with the boys until she is about eight years of age. They play a great deal in the water. A group of children go in a line, splash the water with their hands, and sing: "*Hase teng-o, teng-o teng-o?* So-and-so [name of a child who walks alone behind them] *teng-o, teng-o teng-o.*" The child behind then gives chase and tries to catch them. There is a great deal of laughter. The song means: "Who is crying, crying, crying? So-and-so is crying, crying, crying."

Mothers often bathe their children in the sea, and teach them to swim. Sometimes a woman goes to the plantation for food a day or two after childbirth. She takes good care of the little one and is usually kind in her treatment.

At the age of five or six a girl begins to weed in the yam plantation. At from eight to twelve years, when the second teeth come, the two upper front teeth are knocked out, and at twelve she is usually married. The marriage is arranged by her father, who offers her to the highest bidder and receives for her ten pigs at least. The evening before the wedding the bride calls together her childhood friends, and they play together on the beach. The marriage ceremony is held at the village of the bridegroom, and the bride's relatives and friends attend. The bride's face is painted bright red. She is seated on a log in an open square where everyone can see her. The relatives of the bridegroom first carry across the square beautiful *Dracæna* leaves and poisoned arrows, and hand them over to the relatives of the bride as a token of peace between the two villages. Then ceremonial mats are trailed across, and after each mat a tusk-pig is led by a rope tied to its leg. Each pig is tied to a post till the full price has been paid. A return present, consisting of one tusk-pig, is made to the bridegroom's friends, conch-shells are blown and the bridegroom goes over to claim his bride. He sticks a poisoned arrow into the mat she has about her shoulders. This action signifies that he has the power of life and death over her, and also that he must defend her with his life.

Sometimes a girl's preference is taken into consideration in regard to the choice of her husband, but such instances are rare. If a girl objects to a husband chosen for her, she is beaten and the

marriage takes place. If after marriage she keeps running away and is beaten without effect, she may have her legs burned behind the knees with red-hot stones. Should a woman elope and be caught, she is beaten or killed. Sometimes she is tied and burned alive, but if she is the daughter of a man of high rank her relatives will protect and defend her. A man may have two wives, who are often sisters. At the death of a husband his brother has first claim to the widow, who is paid for again with pigs, but there is no second marriage ceremony. A woman without a husband is rare. A young woman married a man who died a few days after the wedding. She was claimed by his brother, who also died, and she had her third husband within the same month. Such cases, however, are rare.

After her first marriage, at twelve years of age, a girl's friends gather. They clear ground and plant yams for her, and she is fairly started on her life of work. The men make the fences and do the heavier work, but they do not labor as steadily as the women, who perform most of the labor in the plantations and carry the yams long distances to sell them, go fishing, carry water and firewood, cook, make mats, etc. The women own the plantations, and land is inherited through the mother. When a woman marries into another tribe she loses her right in the old tribe, though a child sometimes inherits land in the old tribe through the mother. The women, as well as the men, own tusk-pigs and fowls, and they have a right to these even against their own husbands. A man may have two wives, but each wife must have her own hut. Some women attain high enough rank to have club houses or sacred lodges of their own. To each hut belongs a storehouse built on piles, in which the women keep their yams, vegetables, cocoanuts, and bananas.

The women, as well as the men, attend the sacred ceremonies, and sometimes kill pigs and rise in rank. At all dances the women are spectators, and sometimes they take part. The women's dance follows that of the men of the village to which they belong. The women conduct the mourning ceremonies. They paint their faces bright red, or smear them with ashes, and wail. After the

burial they lament that the dead has gone to his long home. "He has no father, no mother; he has gone, and we are left in sorrow," they sing. At mourning ceremonies they have their set dances. Though the women rise in rank, their rank does not seem to set them off by themselves as do the ranks of the men. Women of different ranks often eat together. A white man can receive food from a storehouse belonging to a woman of rank, but not from one belonging to a man of rank. A man may marry a woman belonging to a higher rank among women than he holds among men. In the late afternoon the men segregate and go to their various sacred lodges, the women cook together, and in the evenings they sit in groups and chat of family affairs, babies, and current news. They wear waist-cloths woven of pandanus leaves, dyed with vegetal dye. The women of high rank use a red waist-cloth.

When a woman dies, she is wrapped up in a mat. Her right hand is made to protrude, and in it a stick is placed, symbolic of a tusk-pig killed at her grave as an entrance fee to the next world, where she dwells in an abode lower than that of the men. No woman has the mourning ceremony (thirty to one hundred days after burial) performed for her. At times old women are buried alive, and there are women for whom not a single tusk-pig has been killed.

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REMARKS ON THE SOCIAL ORGANIZATION OF THE CROW INDIANS

By A. A. GOLDENWEISER

DR LOWIE'S recent paper on the social life of the Crow[1] brings valuable contributions to our knowledge of the organization and customs of these Indians. The interesting chapter on "War Customs" (pp. 230–238) is stated to be an advance sheet of a more elaborate exposition of the subject, which is to follow. The section on "Joking Relationship" (pp. 204–206), its brevity notwithstanding, constitutes the first systematic treatment of these highly curious and little-understood practices. The major part of the paper, however, is devoted to the study of the Crow clan system and relationship terms (pp. 189–212). While the data there presented are of considerable intrinsic value and interest, the method of presenting the material adopted by Dr Lowie also requires a word of comment.

The Crow are organized in exogamous clans with maternal descent. At the present time breaches of the exogamous rule are known to occur. Dr Lowie mentions some six examples, but as these infractions of the ancient custom have all been committed by very young people, we may perhaps follow the author (p. 189) by discarding them. The list of clans given by Dr Lowie (p. 190) embraces thirteen clans grouped into larger units, five of which contain two clans each, and one, three clans. Had Dr Lowie numbered the clans, as he has the "phratries," say I_1, I_2, etc., the succeeding discussion would have proved more easily intelligible. As it is, the list of intermarriages, expressed in terms of thirteen clans of native name, is somewhat confusing. This list, by the way, contains two clan names, *ɪcirete* and *tsi'pawāɬitse*, not included in the thirteen clans. Of these, *ɪcirète* seems to be identical with *ɪ́sawatsɪ̀e*

[1] Lowie, Robert H., Social Life of the Crow Indians, *Anthropological Papers of the American Museum of Natural History*, vol. IX, pt. II, New York, 1912.

(III_1 in the table given below), whereas the identity of *tsi'pawā'itse* remains doubtful. I have disregarded both in my table.

Before we turn to Dr Lowie's interesting discussion of the clan groups with reference to exogamy, a terminological question deserves a word of comment. Dr Lowie writes (p. 193):

> Mr Curtis is obviously of the opinion that the prohibition extended to the larger units, which he accordingly calls "phratries."

Dr Lowie, as we shall see, reaches a negative conclusion as to the exogamy of the "phratries" and accordingly prefers to call them clan associations. Is this identification of a phratry with its exogamous function wise? True, dual divisions most commonly designated as phratries are usually, although not invariably, exogamous. But a phratry, once exogamous, may lose its exogamy while preserving its other functions. This certainly happened among the Iroquois, and probably among the Winnebago. Should the dual divisions in these tribes therefore forfeit their claim to the term phratry? Should we above all permit the application of the term to hinge upon a trait that the phratry shares with clans, village communities, and a number of other social and local groupings? Clan exogamy, in particular, is certainly not less common than phratric exogamy. While ethnological inquiry has shown that certain functions are more commonly associated with certain social groups than with others, it remains no less true that almost any social group may become associated with almost any function. Therefore it seems advisable not to permit a term applied to a social group to depend upon its functions but upon some more general as well as more vague characteristic. I should propose that the term phratry be applied to any subdivision of a tribe that itself embraces at least two smaller social units. The clan associations of the Crow, whether exogamous or not, would then be phratries.

In a rather careful analysis of his data Dr Lowie tries to weigh the evidence for and against the former exogamy of the Crow phratry. He writes:

> Had this been the case [prohibition of marriage within the phratry], clan exogamy might follow as a necessary consequence of phratric

exogamy, and a special investigation would be required to determine whether the exogamous rule applied originally to the lesser or the larger social unit. If, on the other hand, the second statement is accepted ["marriage within the phratry was rare"], we might regard the tendency to eschew marriage with a member of a sister-clan as merely an extension of what must then be viewed as fundamentally a characteristic of the *clan* (p. 194).[1]

While fully endorsing this statement of Dr Lowie's, I cannot subscribe to the passage immediately following, which reads as follows:

> Assuming provisionally the latter alternative, we shall be prepared to find different rules for the several clan-associations inasmuch as it is quite conceivable that a prohibition originally confined to one clan may in some cases be extended to the linked clan, while in other associations no such extension takes place [ibid.].

But "different rules for the several clan-associations" would be just as plausible on the assumption that the phratries once exogamous had lost that function in favor of the clans, but that the phratric exogamy, thoroughly superseded in some instances by the exogamy of the clan, lingered on in some other cases on a par with the more recent clan regulation. Such as it stands, Dr Lowie's case does not carry conviction.[2] We shall presently see, moreover, that an entirely different interpretation of the data may deserve consideration. When Dr Lowie, on the other hand, refers to Crow accounts of overgrown clans separating into smaller divisions and of clans reduced in numbers merging to form one whole, both processes seem credible enough, the latter process having in fact been described among the Kwakiutl, while the former must certainly have taken place more than once among the Iroquois.

[1] *Cf.* "Totemism, An Analytical Study," *Journal of American Folk-Lore*, 1910, section on "Exogamy and Endogamy," pp. 231–243; "Andrew Lang on Method in the Study of Totemism," *American Anthropologist*, n. s., XIV, 1912, pp. 385–386.

[2] In another place (*American Anthropologist*, vol. XIV, 1912, p. 66) Dr Lowie writes: "The fact that the large groups have no names is significant, but cannot be considered as more than presumptive evidence against the hypothesis of exogamy." Even that, however, is saying too much, as exogamous groups without names certainly occur. The dual divisions of the five Iroquois tribes constitute a case in point. They certainly were exogamous, but seem never to have had any names. Or, if a breach of geographical continuity be permitted, we may instance the case of Australia, where nameless exogamous phratries are by no means uncommon.

In an effort to ascertain the rules, if any, guiding intermarriages in recent times, Dr Lowie has recorded some one hundred and fifty marriages. He, however, fails to present his results in tangible statistical form on the ground that "with a limited number of recorded marriages and the large number of combinations possible in a community of thirteen clans, it is, of course, impossible to draw any valuable statistical conclusions" (p. 196). But Dr Lowie entirely underestimates the value of negative results. I therefore append a table (I) prepared on the basis of Dr Lowie's data, which shows at a glance that marriages between clans are at the present time quite random: no clans are preferred as marriage companions, nor is there any regard for phratric limits. The clans given in Dr Lowie's list (p. 190) are represented in the table by I_1, I_2, II_1, etc. Each marriage is recorded twice, namely, in the vertical as well as in the horizontal columns. The series of diagonal lines stands for clan exogamy. In column A are given the total numbers of marriages recorded in each clan. Each figure of column B stands for the number of those marriages in a clan of the vertical column which have not been recorded in the preceding clans of the column. The total of column B is the total number of

TABLE I

	I_1	I_2	II_1	II_2	III_1	III_2	III_3	IV_1	IV_2	V_1	V_2	VI_1	VI_2	A	B
I_1	///	6	9	4	5	4	—	4	7	6	—	5	—	50	50
I_2	6	///	10	1	2	4	2	1	3	7	—	3	—	39	33
II_1	9	10	///	4	5	3	—	1	5	2	—	6	—	45	26
II_2	4	1	4	///	3	4	2	—	1	4	—	1	1	25	16
III_1	5	2	5	3	///	1	1	—	2	2	2	3	—	26	11
III_2	4	4	3	4	1	///	—	—	—	7	1	5	—	29	13
III_3	—	2	—	2	1	—	///	1	1	1	—	—	—	8	3
IV_1	4	1	1	—	—	—	1	///	1	2	—	—	—	10	3
IV_2	7	3	5	1	2	—	1	1	///	1	—	1	—	22	2
V_1	6	7	2	4	2	7	1	2	1	///	—	1	1	34	2
V_2	—	—	—	—	2	1	—	—	—	—	///	—	—	3	
VI_1	5	3	6	1	3	5	—	—	1	1	—	///	—	25	
VI_2	—	—	—	1	—	—	—	—	—	1	—	—	///	2	
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	159

marriages recorded, while column A may be of service whenever the total number of marriages in each clan is of importance. In addition to giving an instantaneous résumé of an otherwise unwieldy mass of data, a table such as this may serve as a convenient foundation of work among the same people by the author or others. As new marriage records accumulate, they can readily be added to the tabulated figures and the totals changed accordingly.

While there seems to be no doubt as to the former historical unity of the Crow and the Hidatsa,[1] Dr Lowie insists on the fundamental differences in the social organizations of the two tribes, as described in more recent times. In his article on "Some Problems in the Ethnology of the Crow and Village Indians,"[2] Dr Lowie writes:

> We may conclude that the system of exogamous groups with matrilineal descent is a Crow-Hidatsa peculiarity. At the same time we must remember that the resemblance between the social organization of these two tribes is limited to this one rather general feature. Indeed, the common possession of this single feature gains significance only through its absence in other tribes.

In the concluding remarks on the social organization of the Crow, Dr Lowie returns to this point in the following passage:

> Among the Crow there is no suggestion of a dual division, while the Hidatsa clans are assembled in two moieties distinguished by the number of their constituent units as the Three-Clans and the Four-Clans. Obviously, these definite social groups cannot be considered the equivalents of the six nameless Crow clan-associations.
>
> It thus appears that not only are the Crow and Hidatsa quite different from the surrounding Plains tribes of both the Siouan and other stocks, but even between the Crow and Hidatsa there are far-reaching differences. Accordingly, we cannot advance in any positive way the theory that their social systems are but differentiations from an older system that existed prior to their separation [p. 207].

In view of the former unity of the Crow and the Hidatsa, the last statement must not be understood literally, but must be taken to mean that Dr Lowie regards the traits of social organization now

[1] See, e. g., *Handbook of American Indians*, I, p. 367.

[2] *American Anthropologist*, n. s., XIV, 1912, p. 66.

characteristic of the Crow and the Hidatsa as of later origin than the separation of the two tribes. Now, the Hidatsa are still organized in two moieties, the names of which, Three-Clans and Four-Clans, must have been suggested by a preëxisting clan system. But whereas the names are young, the social divisions may be old. This becomes highly probable in view of the great prevalence and antiquity of such dual divisions among Indian tribes in general and many Siouan tribes in particular, among whom, as among the Hidatsa, the dual divisions coëxist with a clan system. Thus there can scarcely be any doubt that the phratries of the Hidatsa antedate the separation of the Crow, some two hundred years ago.[1]

If so, the Crow, before their separation, must have shared with the Hidatsa this trait of their social organization. Here a serious difficulty confronts us: granted the former existence of Crow dual divisions, how is it that Dr Lowie's investigations failed to reveal any survivals of the ancient system? The only plausible explanation would lie in some feature of the later transformations of the Crow that may have tended to obscure or even completely to obliterate the preceding organization. That the source of such a development may have been supplied by the clan-associations or phratries of the Crow, is suggested by Dr Radin's researches among the Winnebago.[2] Dr Radin found among this people a division into two phratries, one consisting of eight clans, the other of four. These clans were associated in groups of two and three in such a way that one clan of one phratry was linked to one or two clans of the other phratry. Between such linked clans there was considerable intimacy of relations, and reciprocal functions were exercised by them. Now, if we assume that a dual division among the Crow, which on general grounds we found to be highly probable, actually existed, may not the clans of the Crow also have formed associations across phratry limits? In time, exogamy, presumably

[1] I feel bound to adduce here Dr Lowie's opinion that Matthews' chronological estimate as to the separation of the Crow is somewhat in the nature of a guess. For all we know, the separation may have taken place long before that date. Now, it is, of course, obvious that the longer the period since the separation, the greater the general possibility of the development of Hidatsa phratries after the separation. Thus, the argument in the text would to that extent be weakened.

[2] Manuscript.

associated with the dual divisions, lost its hold on the large units and became a clan characteristic. As the clan associations became more firmly consolidated, the dual divisions thus cut up and redistributed became obscured, and, in the course of time, obliterated, whereas the clan associations developed into the present phratries. That the phratries of such origin should have remained nameless seems highly plausible. In the light of the above hypothesis certain facts about clan contests adduced by Dr Lowie (pp. 202–204) suggest an interpretation different from the one given by the author. Crow informants do not seem to be agreed as to the social units that figure in such contests. In fact, four different explanations are given in which the contestants are described as the sons of men of two clans, or as men of two clans, or as the sons of men of two linked clans, or as any two groups of men without relation to the clans. Granted the two ancient exogamous divisions, it may well be assumed that they constituted the social units which originally figured in such contests. Without being inherently improbable, this hypothesis would also help us reconcile the statements of Dr Lowie's informants. With the weakening of phratric bonds, the functions at contests would be transferred to the clans without abandoning *de facto* the phratric principle. Clansmen of one phratry would contest with clansmen of the other; or the sons of clansmen of one phratry would line up against the sons of clansmen of the other, which arrangement, with phratric exogamy, would still preserve the phratric division. If linked clans originally belonged to two opposite sides, then the sons of clansmen in contesting against the sons of men of the linked clan would also conform to the ancient rule of phratric contests. If, on the other hand, one of the rival groups in the last two instances is examined with reference to its composition, it may well be described as amorphous in so far as it embraces men of different clans.[1]

I was prompted to present the above arguments by the realization of the great probability, on historical grounds, of the former

[1] I encountered a situation analogous to the above among the Iroquois, where certain functions commonly ascribed by observers to the father's clan seem to have originally belonged to the opposite phratry.

existence of dual divisions among the Crow. The several hypotheses, however, are suggested with the greatest diffidence, less in the expectation of their ultimate verification by fact than in the hope that Dr. Lowie and other investigators may thereby be stimulated toward further efforts in their search for traces of ancient dual divisions among the Crow.

Dr Lowie takes pains not to have his list of terms of relationship appear as final. He writes:

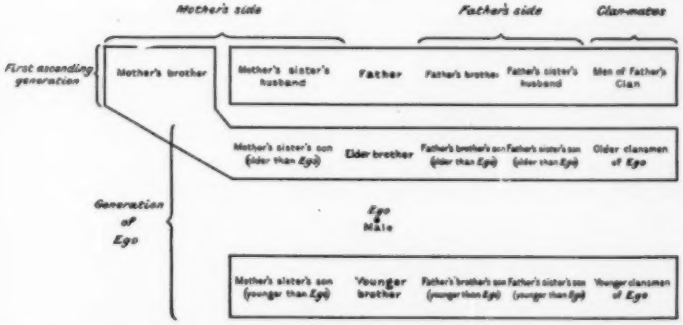
> The following list must not be regarded as exhaustive nor the translations as more than tentative. After repeated revision I came to the conclusion that nothing short of a perfect knowledge of the Crow language would suffice for a perfect list of terms of consanguinity and affinity. For [as Dr Lowie curiously puts it] in addition to the common enough multiplicity of meanings for any one term when translated into English, the student of Crow has to deal with distinct native terms expressing delicate shades of meanings that are fully known only to the older Indians [p. 208].

The experience of investigators with primitive terminologies certainly justifies the author's remarks. It remains nevertheless true that a system of relationship is not merely a terminology but a system, a system based on some definite principle of classification of individuals. The study of terminologies of relationship among many peoples has shown that the principles of classification on which such systems rest always prove exceedingly simple and, as soon as revealed, serve to coördinate the apparently complex series of terms. There seems, therefore, no justification for ethnographers to limit themselves to an objective enumeration of the terms of relationship without attempting to explain the underlying system. Dr Lowie has attempted no such analysis, wherefore his list of terms strikes one as exceedingly complex, in fact, bewildering. I have analyzed and represented in tabular form part of the Crow terms contained in Dr Lowie's list, and offer my results here as a supplement to his investigations.

First of all we must eliminate from the list a number of terms that are not terms of relationship and ought to have been treated separately. I mean such terms as *bi̊watkucè*, "my joking relative";

barâke, "my child"; *bacik·âake*, "my boy"; *bacbatsé*, "my man"; *bacbi'e*, "my woman"; etc. The remaining terms on pages 208-210 are, in part, represented in the following tables. As my aim is rather to elucidate the underlying principles of the system than to give an exhaustive treatment of it, I have included in the tables only two generations, that of the *ego* and the first ascending generation. From these the first descending generation can readily be constructed. The terms used by a woman, which are in part the same as, and in part different from, those used by a man, reveal no new principle; therefore I have limited the tables to the terms used by a man. To achieve greater clearness, the terms applied to male relatives are grouped in Table II; those applied to female relatives in Table III.

TABLE II



A still further extension of the terms must be suggested here. If "father's brother" is equivalent to "father" and "mother's sister" to "mother," then "father's mother's sister's son" and "father's father's brother's son" are also equivalent to "father." Theoretically there is no reason to stop at the second ascending generation, and the principle may thus be expressed in the following terms: Two men who are the descendants, no matter how remote, of two brothers or of two sisters, are "brothers"; similarly, two women who are descendants, no matter how remote, of two brothers or of two sisters, are "sisters." The same principle would, of course, apply to "father's sister's husbands" and to "mother's sister's husbands," etc. Thus, the number of individuals to whom the terms "father," "mother," etc., would apply, would be vastly increased. Nor is this all. For, if "father's sister's husband" is equivalent to "father" and "father's brother's wife" to "mother," then "father's sister's husband's father's sister's husband" should be equivalent to "grandfather" and "father's sister's husband's father's brother's wife" to "grandmother," and so on. A large number of

other logical possibilities could be similarly constructed on the basis of the fundamental principles of the system.

This argument must not be regarded in the light of a formal logical exercise; for it has been repeatedly shown that Indians, or for that matter Australians, are fully able to see the logical corollaries of their relationship systems and, when occasion arises, do consciously apply them. It has also been shown, in a number of concrete instances, just how far the logical extension of the system was carried. Dr Radin, for instance, tells me that among the Winnebago, relationships beyond the second ascending generation are not taken cognizance of.

The question arises: How far beyond the limits of the tables here adduced do the Crow permit their logic to extend their system of relationship? Further information from Dr Lowie on this point would be highly desirable.

TABLE III

	Clan-mates	*Mother's Side*		*Father's Side*	
First ascending generation	women of mother's clan	mother's sister	**mother**	father's brother's wife	[father's sister]
Generation of ego	elder clanswomen of *ego*	mother's sister's daughter (older than *ego*)	**elder sister**	father's brother's daughter (older than *ego*)	father's sister's daughter (older than *ego*)
			ego male		
	younger clanswomen of *ego*	mother's sister's daughter (younger than *ego*)	**younger sister**	father's brother's daughter (younger than *ego*)	father's sister's daughter (younger) than *ego*)

It seems that not all "women of mother's clan" are "mothers" but only those of her clan and generation. Similarly, the terms "elder or younger sisters" are not applied to *all* elder or younger clanswomen of *ego* but only to those of the generation of *ego*. While Dr Lowie does not feel absolutely positive as to this fact, it must be provisionally accepted as the more plausible development. For, if *all* women of the mother's clan were called "mothers" and all women of the clan of *ego*, which is identical with the mother's clan, were called "elder or younger sisters," we should face the highly improbable situation, even in a classificatory system of relationship, of a woman being called "mother" as well as "sister."

In addition to the uses indicated in the tables, the terms "father" and "mother" are also applied by the Crow to wife's father and mother and to husband's father and mother. In the second

ascending generation only two terms are used, "grandfather" and "grandmother," which are applied to the parents of all individuals in the first ascending generation. The first descending generation embraces the children of all individuals of the generation of *ego;* the only terms used are "son" and "daughter." The same terms are also applied to grandchildren.

Additional terms applied to relatives by marriage are given by Dr Lowie on pages 210–212. I shall not here analyze these terms.

The characteristic features of the Crow system of relationship may now be summarized as follows:

1. The application of the terms "father" and "mother" (and of corresponding terms in other generations) is exceedingly wide: the terms cover certain relatives on the father's as well as on the mother's side, parents-in-law, and father's or mother's clan-mates (regardless of generation. See 4).

2. In the generation of *ego* separate terms are used for individuals older and younger than *ego*.

3. The mother's brother, regardless of age, is included in the class of individuals older than *ego* of the generation of *ego*.[1]

4. The differentiation of generations beyond the first ascending and the first descending generations appears very weak, in so far, at least, as it is reflected in the terminology of relationship. The last two points (3 and 4) indicate a tendency in the Crow system to disregard the limits of generations. Whereas, on the one hand, the lateral application of terms follows, in the main, the lines of a generation; on the other hand, the generations are disregarded in a number of ways: the terms "father," "mother,"[2] "sister,"[2] "brother," etc., are applied to corresponding clan-mates without regard to generation; one highly important individual ("mother's

[1] In society organized on a maternal basis the position of the mother's brother is altogether exceptional. His authority in the family is usually greater than that of the father, and he also appears as the main figure, if not in the ownership, at least in the transfer of property by inheritance. These psychological conditions might be deemed sufficient to account for the terminological phenomenon noted above, if not for the fact that in most, if not all, groups other than the Crow identical psychological situations are not reflected in the system of relationship. Perhaps some special economic or ceremonial relations account for the peculiarity?

[2] Compare, however, the legend of Table III.

brother") of the first ascending generation is classed with one age group of the generation of *ego;* no separate terms seem to exist for the second ascending generation, the terms used being derived from those for "father" and "mother"; the second descending generation is altogether merged in the first descending generation.

5. Separate terms are used for male and for female relatives.

6. Part of the terms used by a man for relatives of a given degree of blood relationship are different from those used by a woman.

7. Whereas the terms for "father" in direct address and indirect reference are quite different, the distinction in case of most other terms consists in the common Siouan change of the terminal *a* to a terminal *e*.

The Crow system of relationship is particularly suggestive in so far as it reveals with unusual clearness the process of its own development. It seems highly improbable that the terms originally used for one's own father and mother should have been the same as those used for a number of relatives on the father's and mother's side as well as for parents-in-law. But here the individuals concerned belong at least to one generation. The probability of the situation becomes quite negligible when we consider that the same terms are also used for father's clan-mates and mother's clan-mates. That a term applied to a number of individuals of one generation and to a group of clan-mates should include accidentally, as it were, one's own mother or father, is altogether incredible. Moreover, why should the same term have been applied to the individuals of one generation and to the clan-mates? If, on the other hand, one assumes the terms for "father" and "mother," in the descriptive sense, to have been primary, the entire process becomes perfectly plausible, in fact obvious as a gradual extension of the original meaning of the terms so as to include classes of people united by the principles of generation or of clanship.[1]

[1] Assuming the former existence of dual divisions among the Crow, this process of extension in the application of relationship terms gains in plausibility; for all the individuals to whom the terms "father" and "mother" are applied would then belong to one phratry. The extension would then have to be conceived of as following different lines within the phratry, the line of relations on the father's and mother's side, of one generation; the line of wife's or husband's relations, of the same generation; and the line of clanship, regardless of generation (in case of "father" at least).

Applying the same reasoning to the other terms of relationship, we arrive at a reconstruction of the *Ur*-Crow system of relationship consisting of a small number of descriptive terms. They may be represented in the following table.

TABLE IV

English equivalents	*ego* male	*ego* male or female	*ego* female
2nd ascending generation: grandmother		*masa'kâare*	
2nd ascending generation: grandfather	*axé isá'ke*		*masâ'k-isâ'ka*
1st ascending generation: mother		*i'g'-á*	
1st ascending generation: father	*axé*		*masâka*
1st ascending generation: father's sister		*basbâxɪe*[1]	
Generation of *ego*: elder sister, younger sister	*bàsa'tsîiita*[2]	*bàsa'kâata*	*basóoka*
Generation of *ego*: elder brother (mother's brother)	*bîik'a*		*basâ'are*
Generation of *ego*: younger brother		*matsûka*	
1st and 2nd descending generations: daughter (granddaughter)		*irôoce*[3]	
1st and 2nd descending generations: son (grandson)		*xûutse*	

The table suggests a number of queries. We find that a man and a woman use different terms for "father"; for "mother," on the other hand, there exists only one term. Again, the male and female terms for "grandfather" are derived from the respective terms for "father"; while there is only one term for "grandmother." The latter term seems to be derived from a female term for "mother," and it seems exceedingly improbable that it should also have been the original male term for "grandmother." The situation suggests an old female term for "mother," *masa'ká*, of which *masa'ké* (given by Dr Lowie, p. 209) would be the vocative form, and of which *masa'kâare* would be a derivative. It may also be

[1] The existence of a separate term for "father's sister" suggests a possible former term for "brother's son or daughter" applied by the father's sister to his children. Did such a term exist?

[2] Did not the terms for "elder sister" or "younger sister" extend to brother's wife?

[3] Did not this term extend to (male speaking) wife's brother's son and daughter's husband, and (female speaking) to husband's brother's son?

worth while to look for an old male term for "grandmother," perhaps derived from *i'g·a'*, which term, before the loss of the female term for "mother," may have been a male term. Again *basbâxiè* seems to be a derivative of *axé*, suggesting the former existence of a separate female term for "father's sister." This is the more probable as two terms are used for "mother's brother." However plausible may seem the identification of "mother's brother" with "elder brother," it scarcely could have been primary, and old terms for "mother's brother" may be looked for, or, if *bîik·a* and *basâare* were the original terms for "mother's brother," other terms may have existed for "elder brother" which were lost subsequent to the reclassification. The former existence of separate male and female terms for "elder sister" and "younger brother" also seems highly probable.[1]

[1] Mention must be made here of a recent elaborate attempt to represent a system of relationship diagrammatically. I refer to John P. Harrington's article on "Tewa Relationship Terms" (*American Anthropologist*, July–September, 1912) which contains four highly complicated diagrams (pp. 483–486), the preparation of which must have consumed much time and labor. This notwithstanding, the diagrams are no less perplexing than L. H. Morgan's brain-wrecking lists or Dr Lowie's objective enumeration of terms. The reason of the failure of these authors lies in the fact that they have not attempted to base their presentation of systems of relationship on the native principle of classification of individuals. Whenever this is done, the system always reduces itself to a few simple principles and can readily be represented in tabular form. The two tables of Crow relationships presented in this review may serve to substantiate the above statement. A similar attempt to present a system of relationship from the native point of view has been successfully carried out by Professor Boas in John R. Swanton's monograph on the Haida (*Publications of the Jesup North Pacific Expedition*, vol. 5, p. 64).

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A TUTELO VOCABULARY[1]

By EDWARD SAPIR

WHILE on Six Nations Reserve, Ontario, in August, 1911, I was told of a Cayuga Indian named Andrew Sprague who had had opportunity during his childhood to hear Tutelo spoken fluently and who was supposed to remember considerable of it. As Tutelo is an extinct language, I thought it imperative to rescue from oblivion what was still to be obtained and thus add, if only a mite, to what had already been put on record. As a matter of fact, it turned out that Andrew remembered only very little indeed of Tutelo, and what small amount of material could be obtained from him was extorted with some difficulty. No attempt will here be made to discuss the data. They are given for what they are worth in the hope that they may at some future time prove of use to the student of comparative Siouan linguistics. If in nothing else, perhaps the words listed are of value because they have been recorded with greater phonetic accuracy than is generally attained in mere vocabularies.

PERSONS

mi̯hą̂(i)st̯ɔ̀k' man
wārę́wá' woman
maŋgidá' my cousin
uŋgidá' his cousin
ni̯skɑ́' child, children
kɯkâk' grandfather

ANIMALS

mą̂p'ayeŋk' cow, ox, cattle
ts'uŋk' dog
mą̄sgōlǫ́' pig
hę̂mǭ frog
dalúsgi̯k' cat
babǫ́sgǫ'[a] deer buck
ts'uŋgi̯dę́'[a] horse (literally, "big dog")
ts'uŋgi̯we' wolf (literally, "like a dog")

OBJECTS

mą̂ksāpà'[a] bread
māθę́'[a] knife

[1] Published by permission of the Geological Survey of Canada.

matsiǥóyǫ salt
bēbahę́'² pepper
wādēwî sugar
wōhę́'² soup
wāsaksę́'⁴ shorts in grinding corn
gāk'sagįnagǫ'² silver armlet
yąhę́'⁴ lacrosse stick
wahǫk'mę́'⁴ false face
menî'īgāt'ē'ǫ'ᵃ kettle (evidently contains *meni-* "water")
meni'īgōdǫ jug, jar, glass, bottle (dit.)
kc'embái'⁴ pipe
kcémbāi nǫnî' tobacco

ADVERBS, ADJECTIVES

dābadâ'ᵃ down river
ūdaphái'⁴ up river
bîwā good
nyAgutsgÁhęk' dizzy woman
nihętsgahęk' dizzy man
mą'ganǫ'ga'ᵃ white
mihą mą'ganą'ga'ᵃ white man
mą'ganą'kasît' negro

PRONOUN

henîgu I

VERBS

wālút' mâksāpà'ᵃ eat bread
wāgētś'ʃ'⁴ to dance
hadit'gilêda he's gone home
wet'gilîda let's go home
gwA'gilîda I must go home
wāk'nįendabēwā I'm going to bed
bīlâhuk' thank you!
hęhę́ gidāya k'ęk'ųk'arę́waya surely, everything is all right

NUMERALS

1, *blǭs*
2, *nǭs*
3, *nā*
4, *ǫ̱ū*
5, *bī*
6, *agás*
7, *sakǫ́*
8, *pelǫ̱k'*
9, *sęk'*
10, *bitsǩá'*

PHONETIC NOTE

Short vowels

a, as in German *Mann*
ă, as in English *hat*
e, as in English *met*
ę, as in French *été*
i, as in English *bit*
į, as in French *fini*
ǫ, as in French *beau*
u, as in English *put*

Long Vowels

ā, as in German *Kahn*
ē, as in German *See*
ī, as in German *Sie*
ō, as in German *Sohn*
ū, as in German *gut*

Nasalized vowels

ą, as in French *quand*
ą̄, as in French *vin*
ę, nasalized open *e* (not as open as in French *vin*)
ǫ, nasalized close *o* (*ǫ*), not open as in French *bon*
ų, nasalized open *u*
ą̄, long *ą*
ǭ, long *ǫ*

Diphthong

ai, as in German *mein*

Stopped Consonants

b, *d*, *g*, sonant stops as in English
p̲, *t̲*, *k̲*, *ts̲*, "intermediate" stops
p, –, *k*, *ts*, unaspirated surds
pˑ, *tˑ*, *kˑ*, *tsˑ*, aspirated surds
tśˑ, aspirated *tś* (midway between *ts* and *tc* of English *church*)

Continuants

w, as in English
y, as in English
h, as in English
s, as in English
c, as in English *she*
θ, interdental spirant, as in English *thick*
l, (approximately) as in English
r, trilled *r* (alveolar?). In *kˑękˑųkˑarę́waya r* sounded much like *l*
m, as in English
n, as in English
ŋ, as in English *sing*

Miscellaneous

ˀ, glottal stop
-aˑᵘᵃ (and similarly for other vowels), broken vowel, second part of which is murmured ("echoed")
ˑ, final breath release
ᵘ, occurs once as glide vowel from *c* to *e*
ˊ, main stress
ˋ, secondary stress

GEOLOGICAL SURVEY OF CANADA
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A TEXT IN THE INDIAN LANGUAGE OF PANAMÁ–DARIEN

By J. DYNELEY PRINCE

THE Isthmian aboriginal family known to the Spaniards as Cunas[1] (*Tule*, 'people'; the same name as that used by the San Blas) embraces the so-called San Blas stock of the Colon region.[1] According to A. L. Pinart,[2] at the time of the Spanish conquest the limit of the tribes speaking these dialects appears to have been, on the west, a line from the Chagres river extending to Chorrera. On the east and south the Cunas extended to the river Cacarica, the Espirito Santo mountains, and the river Sambu, which separated the Cunas from the Chocos. Cunas were also found across the Gulf of Darien (Uraba) on the north, and they had villages on its eastern shore. At present, and in fact since their last rising in 1772, they have retired to the mountains and to the unhealthful river regions of the Isthmus, and are noted for their intense hostility to foreigners, whom they refuse to allow within their territories.[3] These Indians are quite distinct linguistically from the other Isthmian families, the Guaymies and the Chocos.

Pinart[4] gives the number of Cunas as 8,000, but he seems to refer only to the southern stock. On the other hand, my San Blas informant, Îna Mákchia,[5] thought that all the Tule numbered some 50,000. The actual census, no doubt, lies between these widely discrepant figures.

The accessible material on the Tule language is as follows: (1) A word-list in the *Journal of the Royal Geographical Society* (XXXVIII, pp. 100–105), by De Puydt; (2) Prince, *Prolegomena to the*

[1] Prince, Prolegomena to the Study of the San Blas, *American Anthropologist*, n. s., XIV, pp. 109–126, 1912.

[2] *Vocabulario Castellano-Cuna*, pp. 1–2.

[3] Prince, op. cit., p. 109.

[4] Op. cit., p. 1.

[5] Prince, op. cit., p. 110.

San Blas Language of Panamá, cited above; (3) a brief manuscript word-list of San Blas in my possession by the late Moravian Bishop Berckenhagen; (4) Pinart's *Vocabulario Castellano-Cuna;* an incomplete list, containing a very brief and poorly stated grammatical sketch; (5) the following Catechism: *Pequeño Catecismo Cristiano, traducido en la lengua Cuna, ò de los Indios de Darien, por el R. P. Pedro de Llisa, Mis°. Cap°. y revisto por los SS. Dr. A. L. Pinart y Dr. F. y Carranza* (Documentos sobre Panamá; Chiriqui-Veraguez-Darien, No. 3). This is the only connected text in Tule.

The Catechism is published in a badly hectographed form from the original handwriting of de Llisa. The text is in places indistinct and has to be read with a magnifying glass. There is no attempt made to explain the Tule text, the writer having contented himself with merely placing the highly idiomatic Indian translation opposite the conventional Spanish phrases. In many instances, the Indian words are evidently wrongly combined, so that the analysis was not easy and could be effected only after every Tule word in this and the other material mentioned above was carefully indexed. The conventional translation of the Catechism is given in the following exposition, in English instead of Spanish, while under each Indian word or combination the corresponding English equivalent is shown. The phonetic system of the Tule is Spanish.

This important Tule text will shortly be supplemented in a separate article by a grammatical sketch and a complete glossary of all the words and analogies in the extant Tule material. For this reason, in the present paper little or no grammatical analysis has been set forth, the commentary being intended chiefly as an exposition of the difficult sentence-structure of the Tule, now illustrated for the first time.

Since the United States Government has established its authority permanently in Panamá, scientific attention must necessarily turn to the dominant Isthmian aboriginal idiom. If this paper and its sequel, although possibly here and there erroneous in conclusions, should prove of service to students of this interesting linguistic family, I shall feel amply repaid for the labor which I have devoted to the collation and analysis of the Tule.

DIOS ONAMAQUE CARTA CHENICUA GOD'S DOCTRINE BOOK LITTLE	LITTLE CHRISTIAN CATECHISM
1. *Dios-din tegua?* God he is who?	Who is God?
2. *Dios e Pacalmal.* God of the Three.	The Most Holy Trinity.
3. *Dios e Pacalmal tegua?* God of the Three who?	Who is the most Holy Trinity?
4. *Dios Pap, Dios e Nuchu,* God Father, God his son, *Dios Espiritu Santo.* God Holy Spirit.	God the Father, God the Son, and God the Holy Ghost.
5. *Dios Pap ati Dios?* God Father he God?	Is the Father God?
6. *Ee, Patir.* Yes, Father (= priest).	Yes, Father.
7. *Dios e Nuchu Dios moga?* God his Son God and (= also)?	Is the Son God?
8. *Ee, Patir.* Yes, Father.	Yes, Father.
9. *Dios Espiritu Santo Dios* God Holy Spirit God *moga?* and (=also)?	Is the Holy Ghost God?
10. *Ee, Patir.* Yes, Father.	Yes, Father.
11. *Dios pagua teguil nica?* God(s) three perhaps there are?	Then there are three Gods?
12. *Dios e pagua-mal cuená guilubu* God of the Three one exists *chun choque-te.* true saying-the.	The Three are only one true God.
13. *Piti e pagua-mal mastol-guin* Which of theThree man *guja-te?* was-made-the?	Which of the Three Persons was made Man?
14. *Dios e Nuchu.* God his Son	God the Son.
15. *Piaje mastol-guin guja-te?* How man was-made-the?	How was he made Man?
16. *Dios Nan S. Maria e abogan.* God's Mother Holy Mary her womb (in).	In the womb of the Blessed Virgin Mary.
17. *Ibi-ga?* What for?	For what purpose?
18. *Mele-gue nen Niya chugal-te,* So-not us Devil getting-the,	To save us from the Devil and

ibi istar.
something bad.

from sin.

19. *Nuet-mala piaje nao?*
Good ones whither go?

Where do the good people go?

20. *Nitalal-neca.*
(To) Heaven.

To Heaven.

21. *Tegua bul nepri apincha-mal?*
Who most good think-the-ones?

Who are the good people?

22. *Dios choquer-guine nepri apincha-mal.*
God's saying-about good think-the-ones.

Those who keep God's Commandments.

23. *Istar apincha-mal piaje nao?*
Bad think-the-ones whither go?

Where do the bad people go?

24. *Niya-neca.*
(To) Hell.

To Hell.

25. *Istar apincha-mal tegua?*
Bad think-the-ones who?

Who are the bad people?

26. *Dios choquer-guine iti chul-mal.*
God's saying-respecting, those without the-ones.

Those who do not fulfill God's Commandments.

27. *Unigua Dios e Nuchu nen at aqueti?*
How God his Son us he holds?

How did the Son of God save us?

28. *Apurco ulguine.*
Death by-means-of.

By his death.

29. *Piaje Dios purcuis-degua?*
Where God died-perhaps?

How did God die?

30. *Na-crus-guine.*
The-cross-on.

On the Holy Cross.

31. *Quilulele tegua?*
Christ who?

Who is Christ?

32. *Dios mastol chun choque-te.*
God man true say-the.

True God and true man.

33. *Unigua Dios?*
How God?

How is he God?

34. *Te-nal Dios tula e Nuchu.*
This-for God living his Son.

Because he is the Son of the living God.

35. *Unigua mastol?*
How (is he) man?

How is he man?

36. *Te-nal Dios e Nan Maria Sa. e Nuchu moga.*
This-for God his Mother M. Sa. her son and (= also).

Because he is also the Son of the Virgin Mary.

37. *Quilulele (Jesus) igui choque?*
Christ (Jesus) what says?

What does the word Jesus mean?

38. *Unilagua.*
Saviour.
Saviour.

39. *Ibi-gua unilagua?*
How Saviour?
From what did he save us?

40. *Ibi istar nen chuja-te*
(From) something bad us saved-the,
Niya-neca moga.
Hell and.
From sin and from the captivity of the Devil.

41. *Igi nen oturta?*
What us he teaches?
What doctrine did he teach?

42. *Dios onamague-ta.*
God's teaching-the.
The Christian Doctrine.

43. *Onamague picua?*
Teaching how many?
How many parts has it?

44. *Paquegua guilubu.*
Four exist.
Four.

45. *Piti ati?*
What this?
What are they?

46. *Itogue-te, Dios palmie, nan*
Faith-the, God's making, the
neca palmie, Dios cuichi
Church's making, God's holy
guilubu.
being.
The Creed, Commandments, Prayers and Sacraments.

47. *Dios onamague uni machi*
God's doctrine how man
itogue?
believes?
What is the sign of a Christian?

48. *Na-crus guilubu.*
The cross it-is.
The Holy Cross.

49. *Unica be-epuo?*
How you-use?
How do you use it?

50. *An-guacal guiluse-gal.*
Myself blessing.
Signing myself and blessing myself.

51. *Ta une mala.*
Show how these.
Let us see how.

52. *Guiluse-gal santa na-crus*
Blessing of Holy Cross
nen-mal-guine, nan aya-chuli
us-on our friend-not
nen-gua abogan cujale Dios
our body save-from God
ulguine, Patir ulguine,
by-means-of, Father by-means-of
e Nuchu ulguine, Espiritu
his Son by-means-of the Holy
Santo ulguine. Te yopi.
Ghost by-means-of. This be.
By the sign of the Holy Cross, free us from our enemies O Lord our God, in the name of the Father, and of the Son, and of the Holy Ghost. Amen.

53. *Ibi-gua mastol o-tule-diba?* To what end was man created?
What-for man was-made-alive?

54. *Dios taque-gal uiseu-gal guel-* To know and to serve God and to enjoy him.
God to-perceive to-desire to-
gu-gal-e.
please-the.

55. *Dios-din ibi-ga nen oguelgu-* With what works does one serve God?
God-he-is what-for we please-
gal-e.
him-the?

56. *Epinchet, Apintaquet, Pen-* Faith, Hope and Charity.
Faith, Hope, Vow-
guil-uquet-e.
paying-the.

57. *Epinchet ogui oturtaque?* What does Faith teach?
Faith what it-teaches?

58. *Dios-guin epincha-malo chuna-* To believe in God as an infinite truth.
God-in believing true-
chuna.
true.

59. *Apintaquet ogui oturtaque?* What does Hope teach?
Hope what it-teaches?

59a. *Apintaque-malo a neut chuna* That we should hope in him as good and all powerful (*sic?*).
Receiving him good true
ulguine.
as.

60. *Penguil-uquet ogui oturtaque?* What does Charity teach?
Vow paying what it-teaches?

61. *Nue-ti nen chabu-malo.* To love him above all things.
Well we love (him).

62. *Uni nue-ti nen epincha-malo?* How shall we know how to believe rightly?
How well we believe?

63. *Ne-guiscugal itogue-te.* I shall learn well the Creed.
The learning Faith-the.

64. *Uni actacuelo equisoe-te?* How will you hope and pray?
How waiting praying-the?

65. *Pap nen-gati-te guiscugal-e.* I shall learn well the Pater Noster.
Father-for-us learning-the.

66. *Unicar nuet chet?* How will you act well?
How well act?

67. *Itogue-te guiscugal oturtaquet* I shall learn well the Command-
Faith-the learn teaching of ments and Sacraments.
Dios onamaguet.
God's doctrine.

68. *Itogue-te tegua pinchaja-te?* Who made the Creed?
Faith-the who thought-it?

69. *Dios e mastol-mala-te.* The Apostles.
God his-men-the.

70. *Ibi-ga?*
What for?
To what end?

71. *Nen cuequi oturta-cal.*
Our heart it-teaches.
To instruct us in the faith.

72. *Dios piaje chi?*
God where also?
Where is God?

73. *Nitalal-nacguine calguibi*
(In) Heaven eternal (on) earth (?)
chi tule gue-atac.
also people not-see. (= but he is invisible.)
In Heaven, on earth, and everywhere.

74. *Quilule piaje chi mastol?*
Christ where also man?
Where is Christ as man?

75. *Nitalal-te-guine Dios nan-neca*
Heaven-the-in God's Church
chi.
also.
In Heaven and in the most Holy Sacrament.

76. *Nan-neca chu ibi-te guilubu?*
(In) Church also what this is?
What is the Most Holy Sacrament?

77. *Matu ologua patir nusaja-te,*
Bread round priest blessed-the,
ina achigua patir nusaja-te
wine mild priest blessed-the
moga.
and.
The Host and the Consecrated Wine.

78. *Matu ologua nusaja-te ibi*
Bread round blessed-the what
chi?
also?
What is the Consecrated Host?

79. *Quilulele abogan, ape, purpa,*
Christ's body, blood, soul,
pela agati chi.
all belonging also.
The body, blood, soul, and divinity of Jesus.

80. *Tegua nen apinchuo caca*
Whom we receive mouth
iabal?
into?
Whom do we receive when we eat it?

81. *Quilulele mastol chuna-te e*
Christ man true-the his
abogan, ape, purpa, pel
body, blood, soul, all
chuna-te.
true-the.
Jesus Christ, God and true man in body, blood, soul, and divinity.

82. *Nusae-ti.*
Naming-the.
Baptism.

83. *Nusae-ti ibi-te ne-guilubu?*
Naming-the what this is?
What is Baptism?

84. *Ti, cualu, pel guilusaja-te.*
Water, oil, all blessed-the.
The Sacrament of water, oil, and Chrism.

85. *Ti igui ne-guilubu?* — What does the water signify?
Water what this is?

86. *Ti ulguinepela nen istar nica* — That by Baptism we become pure
Water by all our evil having
chuli pe-malo. — from all sin.
without you (become).

87. *Patir e mola acalyogue igui* — What does the cap signify?
Priest his cap what
ne-guilubu?
this is?

88. *Nen cuegui nuet chicue-gal.* — The purity of life which we must
Our heart(s) well setting. — observe.

89. *Cualu nusale-ti igui ne-* — And the oil?
Oil blessed-the what this
guilubu?
is?

90. *Espiritu Santo nuet gue(l)gu-gal.* — The plenitude of Grace of the
Holy Spirit well pleasing. — Holy Ghost.

91. *E guilubu-se igui ne-* — And the Chrism?
That which is blessed what this
guilubu?
is?

92. *Nacquine nue nan edi-te.* — The odor of the good example
Eternal good of our offering-the. — which we must present.

93. *Canel ocaet igui ne-guilubu?* — And what does the lighted candle
Candle lighted what this is? — signify?

94. *Nuet nen pincha-malo* — The light of the good example
(The) good we think — which we must present.
otale-gal.
it makes clear.

95. *Nusa-guine iguinen-di ocoe?* — What do we promise in Baptism?
Baptism-in what we promise?

96. *Quilule a-choquet chiet.* — To follow the faith and law of Jesus
Christ his-saying do. — Christ.

97. *Ila pocua nusa-te-mal.* — Confirmation.
Time(s) two Baptism.

98. *Ila pocua nusa-te-mal igui* — What is Confirmation?
Time(s) two Baptism what
ne-guilubu?
this is?

99. *Patri epirquinet tule-ga-bal* — The Sacrament which the Bishop
Priest lord people-to — gives to those whom he confirms.
nusaet.
(he) names.

100. *Unigua-te apiro chumat?* — How must one receive it?
How receive say?

101. *Nue guelgugala.*
Well pleasing.
In a state of Grace.

102. *Patir-mal pel abchoco.*
(To) priests all tell.
Confession.

103. *Patir-mal pel abchoco igui nec-guilubu?*
(To) priests all tell what this is?
What is the Sacrament of Confession?

104. *Ina nue-ti tue-ga nu-taque-ti*
Wine good sin-for healing-the.
A medicine for sin committed.

105. *Chanaje apinchao?*
When receive?
When must one receive it?

106. *Pirca-impa-bali tule ogui(gu)-tani moga.*
Year-once-in person about-to-die and.
Once a year and *in articulo mortis.*

107. *Unigua-te choco?*
How it say?
How does one confess?

108. *Patir-mal pel istar tule chaja-te acpeneguja abchoco-que-gal.*
(To) priests all evil person having-done-the having repented tell-will.
Telling the father Confessor all mortal sins with repentance and intention to sin no more.

109. *Ibi nacpigu choque?*
What sorrow says?
What is sorrow?

110. *Epinchet imal istar tule chaja-te.*
Feeling something bad person having done.
The feeling of having sinned.

111. *Contricion numaque igui-te nec-guilubu?*
Contrition's pain what this is?
What is the grief of Contrition?

112. *Pogúe imal istar an-chaja-te Dios nue-ti.*
Weeping for something bad I-have-done-the (to) God good.
Sorrow for having offended a God so good.

113. *Atricion nacpigu ibi-ga?*
Attrition's grief what for?
What is the grief of Attrition?

114. *Imal istar-ga an-bal-chao chuli.*
Something bad I-again-do-not.
A resolution to sin no more.

115. *Penitencia unigua chao degua?*
Penitence how make perhaps?
How does one complete a penance?

116. *Patir-mal be-ga chao che-gal.*
Priests to you to do do it.
By doing that which the Confessor orders.

117. *Estrema Uncion.*
Extreme Unction.
Extreme Unction.

118. *Estrema Uncion nusale-ti igui*
Extreme Unction blessing-the what
nec-guilubuseet?
this is?
What is the Sacrament of Extreme Unction?

119. *Matu ologua nusacale-ti patir*
Bread round blessed-the priests
ucue-mal purque-taniqui.
give (to) those-about-to-die.
The Sacrament which the priest gives to those about to die.

120. *Unicar nen apincha-malo?*
How we receive?
How must one receive it?

121. *Nue guelgu-gala.*
Well pleasing.
In a state of grace.

122. *Ibi guelgu nen palmi-mala?*
What joy we make?
What grace does it cause us?

123. *Nue nan-ga, ataqueli nen*
Good us-for it awakens our
abogan; ulucus epe-malo.
body; restful (we) stay.
It pardons venial sins and brings back the health of the body, if such is proper.

124. *Ome-mal ibuja-te.*
Women marriage-the.
Matrimony.

125. *Puna ibujale nusale-ti igui*
Woman marry blessed-the what
nec-guilubu?
this is?
What is the Sacrament of Matrimony?

126. *Ancal ucse mastol puna moga,*
Hand hold man woman and,
patir e guacal-guine.
priest himself-at (=before the priest).
The Sacrament which the man and woman receive when they marry.

127. *Te-mala igui nec-guilubu?*
These what (they) are?
What does this Sacrament signify?

128. *Quilulele Dios-nan-neca tar-re*
Christ Church with (?)
mai.
it is.
The Union of Christ with the Church.

129. *Unicar nen apincha-malo?*
How we receive it?
How must one receive it?

130. *Nue purte-que-gala Dios-*
(With) good confessing God-
guine e nue epinche moga.
in the good thought and.
With reverence, good intention, and in a state of grace.

131. *Dios Carta Narmacale-ti*
God's Book Order-the
Palmie.
Make.
The Commandments of God.

132. *Carta narmacale-ti palmie e*
Book order-the make the
cuenagua tegua chao?
first who does?
Who complies with the first Commandment?

133. *Uis itogue-te apintaquelo pen-*
Desire faith hope vow-
guil-uco adi-te chao.
giving that-one does.
Who practises acts of faith, hope, and charity.

134. *Carta narmacale-ti palmie e*
Book order-the make the
pocua igui chao?
second what does?
What does the second Commandment prohibit?

135. *Tule cacanche abchoque apin-*
Person lie tell of-
apin Niya colo.
ten Devil shout.
Swearing falsely of a bad matter and blasphemy.

136. *Dios nan-cal-ba chumaque*
God's mother-against speak
igui nec-guilubu?
what this is?
What is swearing?

137. *Ibi acalacala nen chumaque*
Something dishonest we say
Dios gui-chuli.
(which) God knows-not.
Taking God as a witness.

138. *Istar chumaque igui nec-guilu-*
Evil speaking what this
bu?
is?
What is blasphemy?

139. *Istar imal chet acalacala*
Bad something do evil
Dios e-mal moga.
(to) God his (people) and.
Doing anything against the name of God and the Saints.

140. *Carta narmacale-ti palmie e*
Book order-the make the
pagua tegua iti?
third what this?
Who complies with the third Commandment?

141. *Duminguin tule arpa-chuli iti*
Sunday person work-not this
mai.
is.
He who keeps Sundays and Feast-days.

142. *Duminguin itogue unicar nue*
Sunday obey how well
chapo-gal?
keep it?
How does one keep Sundays?

143. *Ito mai; mele-gue arpago te*
To hear it is; not work this
hoipis.
day.
By hearing Mass and not working on them.

144. *Tule e papa-mal igui nec-*
People the parents what it
guilubu e machi-mal-gati?
is their children for?
What are parents obliged to do?

145. *Ocune-mal oturtaque Dios*
They feed teach God's
mai-guine-te choco e
existence-about tell (their)
nuchu-mal.
children.
To feed their children and instruct them in religion.

146. *Nurcana-mal igui e pap*
Children what the parents
penguile-ti?
owing-the?
What are children obliged to do?

147. *Papa-mal choque-te chao; uis*
Parents saying-the to do; desire
penchu-gal; arpa-gal cho-
to help (them); they work as
galile.
they say.
To obey, respect, and help their parents.

148. *Carta narmacale-ti palmie e*
Book order-the make the
atale igui nec-guilubu?
fifth what this is?
What does the fifth Commandment prohibit?

149. *Tule mele mecho; tegue mele*
People not kill; anyone not
istar imal chet tule
something bad do (to) people's
abogan e purpa.
body or soul.
To kill and to do evil to neighbors with respect to their bodies or their souls.

150. *Carta narmacale-ti palmie e*
Book order-the make the
nercua igui choque?
sixth what it says?
What does the sixth Commandment prohibit?

151. *Be-che, be-choque, be-pinche,*
You-do, you-say, you-think,
be-tagua, istar-mal.
you-see, evil-things.
Doing, saying, thinking, looking at wrong things.

152. *Carta narmacale-ti palmie e*
Book order-the make the
cubleque igui choque?
seventh what it says?
What does the seventh Commandment prohibit?

153. *Aturse-gal imala amel-gati.*
Stealing anything belonging to others.
Plundering or doing injury to one's neighbors.

154. *Carta narmacale-ti palmie e*
Book order-the make the
pabaga igui choque?
eighth what it says?
What does the eighth Commandment prohibit?

155. *Tule mele cacanche chumaque;*
Person not lie tell;
mele istar ibchae-ga.
not evil do-for.
Lying and slandering.

156. *Carta narmacale-ti palmie e*
Book order-the make the
paquebague igui choque e
ninth what it says the
ambegui moga.
tenth and.
What do the ninth and tenth Commandments prohibit?

157. *Tule imal-gati mele-gue*
People things-belonging not
epuo.
use.
Desiring improper things and the property of neighbors.

158. *Dios e-nan-neca carta narma-*
God's Church book order-
cale-ti.
the.
The Commandments of the Church.

159. *E cuenagua Dios e-nan-neca*
The first God's Church
carta narmacale-ti igui nec-
book order-the what this
guilubu?
is?
What does the first Commandment of the Church order?

160. *Misa itogue-le pel domi(n)-*
Mass hearing-the every Sun-
guin Dios nan guilubu.
day God's festivals.
To hear Mass Sundays and festivals.

161. *Dios e-nan-neca carta narma-*
God's Church book order-
cale-ti e pocuagua igui nec-
the the second what this
guilubu?
is?
What does the second Commandment order?

162. *Pirca-guini-l cuena acalacala*
Year-in once evil
imal chet patir be-ga
something do priest you-to
chocal.
says.
To confess once a year.

163. *Dios e-nan-neca carta narma-*
God's Church book order-
cale-ti e pagua igui nec-
the the third what this
guilubu?
is?
What does the third Commandment order?

164. *Dios apino ib cuena-ga*
God receive something eat-for
Dios nuchu e-guilubu.
God's son his-being.
To communicate through Lent and on Easter.

165. *Dios e-nan-neca carta narma-*
God's Church book order-
What does the fourth Commandment order?

cale-ti e paquegua igui nec-
the the fourth what this
guilubu?
is?

166. *Dios purcuet guilubu mele-gue*
God's death being not
chana cuno.
meat eat.

To fast on prescribed days and not to eat meat on prohibited days.

167. *Dios e-nan-neca carta narma-*
God's Church book order-
cale-ti e atale igui nec-
the the fifth what this
guilubu?
is?

What does the fifth Commandment order?

168. *Dios e nan neca penucal*
God's Church owed
ticsa-jale e puquet.
taxes their payment.

To pay the tithes and first fruits to the Church of God.

169. *Guil Pap nen-gati-te.*
Eternal Father us-belonging-the.

The Pater Noster.

Pap nen-guine pe-chigui
Father us-for you sit
nitalal-neca; cuichi chi pe-
(in) heaven; holy also your
nuca-guine; an-che
name with-respect-to; I do
be-taque-guine;
you care for (see) with-respect-to;
pe-pincha-guin napa-guine
you-think-respecting earth-in
mepa ayopi. Matu nan-
heaven let it be. Bread us-
guine uco; pe-amal choco-
for give; you-otherwise say-
te moga nen penguil-mal,
it and (as to) our debts.
nen-di-le-yo chao nen
we-indeed-as do (to) our
penguil-mala; melegue nen
debtors; not that we
arcuano niya imal nan-
go down (to) devil something us-
ga chao, señor, ibi istar.
for do, Lord, (with respect to) what is evil.
Te-yopi.
Amen.

Our Father, who art in Heaven. Hallowed be thy name. Thy kingdom come; thy will be done, on earth as it is in Heaven. Give us this day our daily bread and forgive us our trespasses, as we forgive those who trespass against us. And deliver us from evil. Amen.

170. *Dios e Nana Onamaguet.*
God his Mother's Prayer.

Hail Mary.

Dios imiso Maria imele; pe-
God now O Mary (?); thou-
din-guelgu; e pap pe-
indeed art joyful; the father with
bal chinu-guine; pe-guin
thee is; you with-respect-to
pe-yo pun-mal impa-guine
you indeed women among
nusale-guin; pe ibi
blessed-for; you something
nuhue-ti pe-abogan
good your body (-in)
Quilulele noali. Nusae
Christ bring. Holy
Maria Dios e nan
Mary God's Mother
onamague nan-gati istar nan
pray us-for evil we
pincha; imis yo nan-purco
think; now indeed we dying
moga. Te-yopi-te.
and. Let it be thus.

Hail Mary, full of grace. The Lord is with thee. Blessed art thou among women. Blessed is the fruit of thy womb Jesus. Holy Mary, Mother of God, pray for us sinners now and in the hour of our death. Amen.

171. *Itogue chuma-te.*
Faith saying-the.

The Creed.

Pap cherret itogo a-bul-
Father ancient (I)believe more
enena chuli; nitalal nen-
than he is not; heaven us-
guine napsa ne(n)-guin
for earth us-for
moga Quilulele a-nuchu
also (he made); Christ his son
ueaca nan epir-guine otur-
only(?) our lord-for teach-
tacal Dios e nan e nuchu
ing God's Mother's son
ulguine; Espiritu Santo
by-means-of; (from)the Holy Ghost
abchoja-te; tuleja Dios
commanded-the; from life of God's
nan pule-ti guilubu; pal-
mother virgin-the he is; tor-
itos Poncio Pilato choque-
tures (?) of P. P. confess-
guine; na-cruz-guine tar-na-
ing-as-to; cross-on they put
chis-mala-te; purcuis tula-
him on it; dead life-

I believe in God the Father Almighty, the Maker of Heaven and Earth. And in Jesus Christ his only Son our Lord who was conceived by the Holy Ghost; born of the Virgin Mary; suffered under Pontius Pilate; was crucified dead and buried. He descended into Hell. The third day he rose again from the dead, ascended into Heaven and sitteth on the right hand of God the Father Almighty, from whence he shall come to judge the quick and the dead. I believe in the Holy Ghost, the Holy Catholic Church, the Communion of Saints, the forgiveness of sinners, the resurrection of the dead and the life everlasting

ja-te; te acar niya-neca
from-the; he then (to) Hell
arpi; ipa pagua-ti-bal
goes down; day third-the-on
ataquet purcue-na-matale
he wakens the dead ones
(= *-mala-te*) *impa-guine;*
among;
nicpa-bal na-cuisa-te;
above-to his-going up-the;
te-bal chi neca ito
there-in (with) also house of hearing
mai a-pap choque-te;
is his-father what he commands;
te-bal acar nonico taque-gal
there then sending he sees
oguigus-mala-te tulejal-
of the dead (and) the
mala-te. Ito-guine Espiritu
living. Belief-for Holy
Santo ul-guine; nan neca
Ghost in; Church
catolica; matu ologua nusa-
Catholic; bread round of holy
jala-te; patir nan-ga nue-ti
ones-the; priest us-for good thing
abchoco; e oguigujal-bal
telling; the dead-for
ataque; guilubu nacguine-
awakening; existence everlast-
ki. Te yopi.
ing. This be so.

Amen.

172. *Dios carta narmacale-ti palmie.*
God's book order-the make.

The Commandments of God.

Dios carta narcamale-ti
God's book order-the
ambegui guilubu.
ten are.
Pagua Dios-gati; e cuplegue
Three God belong; the seven
nenmal-gati.
us-belong.

The Commandments of God are ten. The three first pertain to the love of God and the other seven to the care of one's neighbor.

173. *E cuena-ti. Dios nan-ga*
The first. God us-for
chabu-bu-gal.
must be loved.

The first. One shall love God above all things.

174. *E pocua. Dios e nuie mele*
The second. God's name not

The second. Not to swear the name of God in vain.

penguil choque-ga.
(in) oath say.

175. *E pagua. Dios nan-neca pali nane.*
The third. (To) God's Church often go.
The third. To keep holy the festivals.

176. *E paquegua. Nen pap nen nana-gati nue chabu.*
The fourth. Our father our mother-for well love.
The fourth. To honor one's father and mother.

177. *E atale. Mele tule mechoe.*
The fifth. Not people kill.
The fifth. Not to slay.

178. *E nercua. Pali-pali mele nen puna epuo.*
The sixth. Promiscuously not we woman use.
The sixth. Not to fornicate.

179. *E cublegue. Mele-gue ibi-naal atursao.*
The seventh. Not anything steal.
The seventh. Not to steal.

180. *E pabaca. Mele-gue cacanche chumaque.*
The eighth. Not a lie tell.
The eighth. Not to bear false witness, nor to lie.

181. *E paquebague. Puna amal-gati mele-gue apuo.*
The ninth. Woman others-belonging not use.
The ninth. Not to desire the wife of your neighbor.

182. *E ambegui. Imal pe-gati-chuli mele pinche chugal.*
The tenth. Things you-belonging-not not think (to) get.
The tenth. Not to covet the goods of others.

183. *Iti ambegui carta narcamale-ti (= narmacale-ti) palmie pocua-guin gu(i)lulseet; Dios an-ga imal choco, chao; nue chabu-gal nen-mal-e-te. Te yopi-te.*
These ten book order-the make two-in are; God us-to something says, (to) do; well (we) love our neighbor-the. This be so.
These ten Commandments are comprised in two; to serve and love God above all other things and thy neighbor as thyself. Amen.

184. *Dios nan-neca carta narca-male-ti palmie atale guilubu.*
God's Church book order-the make five are.
The Commandments of the Holy Mother Church are five.

185. I. *E cuenagua. Pel dominguin*
The first. Every Sunday
misa itogue-te.
Mass hearing-the.
To hear Mass on Sundays and festivals.

186. II. *E pocua. Pirca-bali*
The second. Year-in
impa-guin purtacal.
among confess.
To confess at least once a year.

187. III. *E pagua. Dios nan*
The third. God's for us
toto guilubu, matu ologua
feast (when) it is, bread round
apingue-gal.
(we) receive.
To communicate on Easter.

188. IV. *E paquegue. Dios purcue*
The fourth. God's death
guilubu, omoe ipa-guena
(when) it is, promise days-in
mele ib cune.
not anything eat.
To fast in Lent and on other prescribed days.

189. V. *E atale. Penuque-gal*
The fifth. What is owing
imal ticsal puquet.
something tax pay.
Te yopi-te.
Amen.
To pay the tithes and first fruits. Amen.

190. *Dios e-nan-neca iguen*
God's Church someone
guilubuset.
blessed.
The Sacraments of the Holy Mother Church.

191. I. *E cuenag(u)a. Nuse-gal.*
The first. Naming.
Baptism.

192. II. *E pocua. Patir*
The second. Priest
epir-guine-ti nusane.
lord-the naming.
Confirmation (= Bishop's naming).

193. III. *E paqua. Matu ologua*
The third. Bread round
apinguile-ti.
receiving-the.
The Eucharist.

194. IV. *E paquegua. Patir*
The fourth. Priest
imal nan-ga choque, chao.
something us-to saying, to do.
Penance.

195. V. *E atale. Oguigu-dani*
The fifth. He about to die
patir secolo.
priest calls.
Extreme Unction.

196. VI. *E nercua. Patir-mal* Holy Orders.
The sixth. Priests
ocua nane-gal.
(to) promise go.

197. VII. *E cublegue. Ome-mal* Matrimony.
The seventh. Women
nue-ti-buet.
properly love.

198. *Patir abchocal.* The *Confiteor.*
(To) priest confess.

An yopi-te pel an-choco
I indeed all I tell
Dios-guine e tumati-te-guine,
God-unto the great-one-unto,
Dios nan Maria-te-guine,
God's Mother Mary-the-unto,
Miguel Alcanjel-te-guine,
Michael Archangel-the-unto,
Juan Baptista, e mejal-
John the Baptist, the re-
mala-te amal moga, Pedro
lations neighbors and, Peter
Pablo-te-guil-guine, amal
Paul-the-eternal-unto, the
e pacalmal, pe
neighbors of the Trinity, you
patir moga pel istar an-
father and, all evil I
chaje am-be-ga-choco;
have done I you-unto-tell;
an-bal-chao chuli; ne
I again (will) do not; the
epincha-chul-bali-te, caca-
thought-not-by, mouth-
guin, absogue-te
by, saying-the (=intending)
chao; an nacpoe, an nacpoe,
to do; my fault, my fault,
an nue nacpoe-te ulguine;
my good (!) fault-the by;
Dios nan Maria tergui
God's mother Mary virgin(?)
tar-ga choco; Miguel
with her(?) (I) tell; Michael
Alcanjel, J. Bta, e
Archangel, J. Bta, the
mejal-mala-te Pedro Pablo
relations Peter Paul

I, a sinner, confess to God Almighty, to the ever blessed Virgin Mary, to the blessed St. Michael Archangel, to St. John the Baptist, to the most holy Apostles, St. Peter and St. Paul, and to all the Saints and to you father, to whom I tell my fault, that I have grievously sinned in thought, word and deed, through my fault, through my fault, through my grievous fault, and, therefore, I pray the Blessed ever-Virgin Mary, the blessed St. Michael Archangel, St. John the Baptist, and the Apostles St Peter and St Paul, and thee father, that you pray for me to God our Lord. Amen.

an-pe-chuna-te patir
I-you-invoke father
pe-an-ga Dios icar-
you-for-me (pray) God's way-
bali nue te-yopi.
on well let it be.

199. *Contricion ito guilubu.* Act of Contrition.
Contrition hearing it-is.

Dios angati ibi istar It grieves me, my God, to
God me-for something bad have sinned, to have offended
an-chaja-te istar an- thee, for that thou alone art so
I have done-the evil I good a God and because thou
chumaque; pe yancal-ba pe couldst punish me with Hell.
say; you because-of you I intend to sin no more, to
Dios unilagua nueti confess myself and to perform
(are a) God saviour good the penance which the Father
cuenagua-ti; an peli purcua Confessor may impose upon me.
only-the; I all confess(?) Amen.
chaja-te; pe-an-ga-oturtaque
what (I) did; you to me punish
Niya-neca ul-guine; imis
Hell by-means-of; now
acar an-bal-chao chuli, patir
then I again do not, priest
pela choco nue itogal
all (he) says well obeying
igui an-che palmie-mala.
as to what I must do.
Te yopi-te.
This be so.

200. *Itogue-te apintaque pelguil-* Act of Faith, Hope, and Charity.
Faith hope Vow-
uquet.
paying.

Dios epinche; Dios e I believe in God, I hope in
God (I) receive; God I God, I love God above all
an-ataco; Dios e an-chabu; things and I repent in my soul
hope; God I love; for having sinned. Amen.
yer an-nacpigu ibi
because I grieve something
istar chaja-te. Te yopi-te.
evil having done. This be so.

201. *Dios guilubu;* Holy God;
God it-is;
Dios guilubu; Holy God;
God it-is;
Dios canti quili; Holy Mighty One;
God strong eternal;

Dios que purgue-te;
God not dying-thee;
Imal an-ga unir-gal
Something me-for save it
pel ibi istar.
(from) all that is evil.

Holy Immortal One;
Save us, O Lord
from all evil.

202. *Patir nen chumaque; nen*
Father we tell; we
apin pocuagua.
receive absolution(?).

Confession; relating one's sins to the Father Confessor.

203. *Inacua pe pur-mutaque?*
How long ago you confess?

How long since you confessed?

204. *Pirca guena. Que cuena.*
Year one. Not once.
Chultenal.
A long time.

A year. Never. A long time.

205. *Patir be-ga ib choquegal*
Priest you-to something says it
pechaja?
you did it?
Ee, chuli, patir.
Yes, no, Father.

Hast thou prayed for penitence?

Yes, no, Father.

206. *Ibi istar pe pinchaja;*
Something bad you receive;
ibi istar pe
something bad you
abchoque-gal?
say?
Ee, chuli, patir.
Yes, no, Father.

Have you believed in the Devil or evil things?

Yes, no, Father.

207. *Ila picua?*
Times how many?

How many times?

208. *Il cuena, ila pocua, untar*
Time one, time two, much-
impa-g-am-bali.
among.

Once, twice, many, or several times.

209. *Acus pe-chumague be cacan*
Falsehood you say you lie
chaja-te?
have done?
Eto, chuli.
Yes, no.

Have you sworn falsely, or with a lie?

Yes, no.

210 *Penguil pe-chumague tule*
Oath you say person (to)
mecho?
kill?
Eto, chuli.
Yes, no.

Have you sworn to slay?

Yes, no.

211. *Ila picua.* — How many times?
Time(s) how many?

212. *Il cuena, etc.* — Once, etc.
One time, etc.

213. *Pe istar chumaja-te chuli degua?* — Have you not spoken blasphemy?
You evil having spoken not perhaps?
Eto, chuli. — Yes, no.
Yes, no.

214. *Duminguin-mal nequin pe iti mai?* — Have you kept holy Sundays and Holidays?
Sundays present(?) you here are?
Eto, chuli. — Yes, no.
Yes, no.

215. *Pe papa-mal chuman-mata-te (= -mala-te) impa-guine pe-secole?* — Have you failed to your parents, or to your elders?
Your parents once a week you-call?
Eto, chuli. — Yes, no.
Yes, no.

216. *Dios onamaque carta pe-nuscanaje oturtaje?* — Have you taught the doctrine to your children?
God's teaching book your children you instruct?
Eto, chuli. — Yes, no.
Yes, no.

217. *Tule-mal pe cuen mecha; tule-mal pi-chigli-leja-te?* — Have you slain or wounded anyone?
People you one kill; people you have cut?
Eto, chuli. — Yes, no.
Yes, no.

218. *Echa-guin pe-calitoja tule-mal-ga?* — Have you fought with weapons?
Weapons-with you-fought people- with?
Eto, chuli. — Yes, no.
Yes, no.

219. *Pe mumurgus chu choquegua?* — Have you been drunk?
You drunk perhaps say?
Eto, chuli. — Yes, no.
Yes, no.

220. *Pundol-mal pe-atursa choquegua?* — Have you sinned with a woman?
Women you-steal say?

Eto, chuli. Yes, no.
Yes, no.

221. *Pe-dina nue puna ibgua* Are you married?
You-indeed good woman something
Dios nan neca choque-te?
(in) Church say?
Eto, chuli. Yes, no.
Yes, no.

222. *Pe ibuja-te pe-mejar-mal de-* Was she related to you?
You married your relations per-
gua?
haps?
Eto, chuli. Yes, no.
Yes, no.

223. *Pe pundol pibioja choquegua?* Have you beaten your wife?
You wife beaten say?
Eto, chuli. Yes, no.
Yes, no.

224. *Iguena pe-atursa chu choque-* Have you robbed anyone?
Anyone you-rob perhaps-
gua?
say?
Eto, chuli. Yes, no.
Yes, no.

225. *Tule yancalbal istar imal* Have you slandered anyone?
People against evil something
pe-chaja?
you-have-done?
Eto, chuli. Yes, no.
Yes, no.

226. *Dios purquet guilubu chana cu* Have you eaten meat on forbidden days?
God's death when-it-is meat eat
chu choquegua?
perhaps say?
Eto, chuli. Yes, no.
Yes, no.

227. *Duminguin-mal patir onama-* Have you heard Mass on Sundays?
Sundays priest's teach-
gue pe-itoja?
ing you-heard?
Eto, chuli. Yes, no.
Yes, no.

228. *Ticsal puquet pe-napos choque-* Have you paid the tithes and the first-fruits?
Taxes payment you-pay say?
gua?
Eto, chuli. Yes, no.
Yes, no.

229. *Guiscugale.* Advice.
Advice.

Nue be-che; Dios be-cha-
Well you-do; God you-
bu-gal; mele-gue tua-tar
love-him; not for sin
mumuru; mele-gue ibi-mala
drunk; not anything
atursao; pane-pane pe-ona-
steal; often you-
maque; mele-gue bel istar
pray; not all bad
chao.
do.

Be a good Christian; love God; do not be a drunkard; do not be a thief; pray every day; never sin dishonestly.

Nue ulucuja Pap nen-
Well resting Father us-
guine ila nercua pe-ona-
for times six you-
maque chuli; Dios e Nana
pray not; God's Mother's
onamaque pagua pe-onama-
prayer three you
que. Dios an-gati ibi istar
pray. God me-for what evil
an-chaja-te an-chumaque; pe
I have done I tell; you
yancalba pe Dios unilagua
because-of you (are) God Saviour
nue-ti cuenagua-ti an pel
good only-the I all
i-purcua chaja-te; Pe an-ga
confession have made; You me-to
oturtaque Niya-neca
punish Hell
ulguine, imis acar an-bal-
by-means-of, now then I again
chao chuli; patir pela an-ga
do not; priest all me-to
choco nue itogal igui
says well (I) obey as to what
an-che palmi-mala. Te yopi.
I must do. This be so.

And for a penance you shall pray six *Pater Nosters* and three *Ave Marias*. I repent, my God, for having sinned, for having offended thee, only for that Thou art a God so good and also because Thou could'st punish me with Hell; I intend to sin no more, to confess myself and to fulfill the penance, which the Father Confessor may impose upon me. Amen.

230. *Ocus.*
End.

The End.

COMMENTARY

Title. *onamaque* 'doctrine,' 47; 'pray' *onamaguet*, 170; 'prayer,' 229.

1. *-din* definite element *di* + *n*; n. 53; 55. Cf. *pe-din*, 170.

2, 3, 4. *e-* demonstr. particle; sometimes article, sometimes possessive.

7. *moga* = 'and, also'; follows the noun which it connects, passim.

11. *teguil* interr. *te* demonstr. + *gui* + *l*, as in *nitala-l*, 20; *pircaguini-l*, 162.

12. *-te* demonstr. sfx. passim. Sense: 'The saying is true that God of the Three exists as One.'

13. *mastol-guin* 'for man (he was made'). *guin* appears as: 'in, by, through, about,' etc.

16. *e abogan;* lit. 'with respect to the womb'; locative understood; cf. 24, et passim.

18. *mele-gue,* passim; *mele* and *gue* (*gue*, 73) both mean 'not.' *ibi istar* '(with respect to) something bad.'

19. *-t* in *nuet* demonstr.; *-mala* = ordinary pl. ending; cf. *mala* 'these,' 119.

21. 'Who are those who think most good?'

23. 'Who are those who think bad?'

24. Implied loc. in *Niya-neca;* cf. 16.

25. *tegua* ordinarily 'who'?, but sometimes plain interrogative, as *degua* 11, 27, 115, 213.

26. 'Those who are without (= have not) God's saying.' *chul, chuli* = common suffixed neg., 76.

27. *at-aque-li: ati* 'he' + *aque* 'hold' + demonstr. *-ti;* or perhaps *a-taquet* 'he wakens,' 104, 171. *-gua* in *unigua* (*unica*, 49) = *-gua* in *ibigua*, 53.

30. *na* seems demonstr. like *ne* in *ne-guiscugal*, 63; *ne-quin*, 214.

31. *Quilulele* 'eternal (*quil*) one.'

32. Cf. 12.

34. *te-nal* 'for this,' same element as 179, *ibi-naal* (cf. 204).

40. *chuja-te* 'the-having-saved' = 'he saved.' The idea 'from' is in the *-ja* which also = past, as *an-chaja-te* 'the-my-having-done,' passim. Cf. 168, where *-ja* = 'of.'

42. Note *-ta* = *-te*.

43. *picua*, 27. *pi* interr. as in *piti*, 45.

45. *piti* = *pi* interr. + *iti* demonstr.

46. *itogue-te* lit. 'the hearing'; *ito* 'hear,' hence 'believe, obey,' and even 'have.'

Dios palmie; passim: 'what God makes' = 'Commandment,' 131.

nan-neca or *e-nan-neca* = 'mother-house' = 'Church,' passim.

guilubu 'existence' or, 'to be'; noun or verb, passim.

47. *uni* 'how,' 47; *une*, 51.

49. *unica;* cf. 27.

50. *an-guacal*, lit: 'my skull,' 126.

51. *mala*, cf. 19.

52. *aya-chuli* 'friend-not' = 'unfriend;' note absence of pl. sign.

53. *ibi-gua*, 27. *o-tule-di-ba*, incorporation of *tule* 'live, alive, people.' For *-di*, cf. 1.

54. Note the def. *e-* as in 56 and as in (*t*)*e*, 40. The *-gal* (*-cal*, 71) makes the verb active, 121.

55. *-din*, 1.

56. *apintaquet* really = 'receiving' (*apintaquelo*, 133). The proper word for hope is *actacuelo*, 64.

57. *ogui;* by-form of *igui*, 60.

59. 'We receive (pl.) him as the good and true one.'

61. Note def. *nue-ti*, used as adverb.

63. *guiscugal* (67); cf. 229 = 'advice' (64).

64. *actacuelo*, 56; 200. *equisoe* seems to contain the root *quis-guis*, as in *guiscugal*, 63.

67. '(Through) faith I learn,' etc.

73. *nacguine*, cf. 92 and 171 *nacguineki*. *calguibi* 'earth' (?). The usual word is *nabsa*, 171. *gue* = not, 18.

75. Note how *-guine* 'in' is carried over to the second element, i. e., 'in heaven and in God's church.'

76. *chu* (219) additional dubitative like *chi;* same element as in *chu-li* not, 26. Cf. 224; 226.

77. 'Bread round' = the consecrated wafer.

80. *ia-bal* 'into' (?); contains frequent preposition *-bal* 'with, together with.' Cf. 114: *-bal-* 'again.'

82. Close connection between *nusa* 'name' and 'bless'; cf. *guilusa*, 84: 'eternally named' (note *-se* in *guilubu-se*, 91; *guilubu-seet*, 118; 183; *guilul-seet*, 190.

86. 'You (pl.) become not (*chuli*) having (*nica*) all our evil by means of water' = 'divested of all evil,' etc.

89. *nusale-ti*, 82.

92. *nacguine*, 73; 171. *edi-te*, I cannot place.

95. *ocoe* 'promise'; really = 'give'; *uco*, 169; *ucue-mal*, 119; *ocua*, 196.

99. *epir-quin;* lit: 'for (*quin-guin*) lord' + def. *-et*. 'Priest-lord' = Bishop.

104. *tue* 'sin'; cf. *tua-tar*, 229. *nu-taquet*, 171; = 'good wakening' = 'healing'; cf. 27.

106. *pirca-impa-bali;* lit. 'year-among-in'; seems to be used idiomatically for 'once a year.' Cf. *impa-g-ambali*, 208; *impa-guine*, 170.

ogui(gu)-tani; cf. *oguigu-dani*, 195. *oguigu* 'die' + *tani* 'come'; i. e., 'going to die.'

108. '(To) the priests, the person having done all the evil will tell it.'

110. Note lack of conjunction: 'feeling that one has done,' etc. Cf. 112: 'I-have-done-the' = 'the-my-having-done' = 'which I have done.'

114. Note *-bal-* again, passim and 80.

116. The word 'say' has been omitted: 'what the priest says to you to do, do it.'

118. *guilubuseet;* lit. 'what this is as a blessing,' 82.

119. *patir ucue-mal* 'the priests give.' Note one ending *-mal*, pl. for both noun and verb, 19.

121. *guelgu-gala, v. a.*, 54. Note the use of *guelgu*, as verb in 121 and as noun in 122.

123. 'Good-us-for' implies conditional clause = 'if good for us.'

126. 'The hand-holding of man and woman before the priest.'

guacal 'self,' 50 = 'skull.'

128. *tar-re*, cf. 229 and 171.

130. *purteque-gala;* cf. *purta-cal*, 186.

131. *narmacale-ti* contains *narma* 'order,' cf. 46. The book which makes the order = Commandment.

133. *apintaquelo*, 56.

136. *nan-cal-ba;* element *cal* same as in *yancal-ba*, 199; 225 'against;' 229.

139. Note the redundancy with *istar* and *acalacala;* 'to do something bad (and) evil to God,' etc. *e-mal* = 'his ones' (pl.).

141. *arpa*, 147, and *arpago*, 143; not to be confused with *arpi* 'descend,' in 171.

142. The *-r* in *unicar* is probably factitious = *unigua* (*-ca*, 49).

143. The word *misa* 'Mass' omitted; cf. 160.

146. Dative expressed by the construct relation: 'the parents' debt' = 'debt to the parents.'

147. *arpa*, 141.

153. *amel* 'the other, another'; cf. *amal* 'otherwise,' 169; *amal-gati*, 181.

155. *ib chae;* lit. 'anything do' (*ib* = *ibi*, passim); cf. 206 *abchoque.*

160. *Dios nan guilubu* seems to mean: 'God's Mother's existence!' Probably *neca* omitted; i. e., *nan neca guilubu* = 'God's Church's existence' = 'festival' (?).

162. *pirca-guini-l* (for *l* cf. 11).

164. 'To receive God as food when is the existence of his Son' = 'Easter'; cf. 160.

166. 'At the time of God's death' = Lent.

168. The *-jale* in *ticsa* = 'of taxes their payment.' Cf. 40.

169. 'Father who art for us (= ours); you sit in Heaven, holy also with respect to your name; I do in accordance with what you see (= care for); Regarding what you think, may it be on earth and in Heaven. Bread for us give; and do you say it otherwise (= forgive, 153) with respect to our debts, as we indeed do to our debtors; so that not we go down to the Devil, do thou do something for us, O Lord, with respect to what is evil. Amen.'

170. I cannot explain *imele* or *chinu-guine*, except to indicate that *-guine* seems to be the verbal complement. Note participial *istar nan pinche* 'evil we-who think.'

171. *a-bul-enena* seems to mean 'there is no one more (*bul*) than he.' *ueaca* must be a scribal error for *cuenchagua* 'only.' *abchoja-te* 'the one commanded by the Holy Ghost.' The first person must be understood again with *choque-guine* 'I confess.' *tar* seems to mean 'with,' 128; 198; 229; here, however, it may mean 'also.' See 198. *Na-chis-mala-te* = *na* the demonstr. + *chis* 'put' (?). *Purcuis tulaja-te;* lit. 'dead from life.' *Arpi* not to be confused with *arpa, arpago* 'work,' 141; 143; 147. *nicpa-bal na-cuisa-te* 'this is the going up to above;' *neco ito* 'house of hearing' means 'judgment' as to what his Father commands. *nonico* 'sending.' 'To see a sending of the dead and living' indicates the proper disposition of the nations. *Ito-guine* 'belief-for' again must be rendered 'I believe.' *Patir nan-ga nue-ti abchoco* 'the priest telling us a good thing' = the forgiveness of sinners. *Nacguineki;* cf. 73; 92.

172. *narcamale-ti;* 'error' for *narmacale-ti.*

173. *chabu-bu-gal* must be loved. *-bu* seems to = *-bie* 'wish, desire, ought' in phrases such as *mas cumbie* 'he would like to eat something'; cf. 197.

178. *pali-pali* 'promiscuously'; cf. 175 and *panepane,* 229. *epuo* cf. 181.

179. *naal* same element as in *te-nal,* 34.

181. *amal-gati,* 153 and 169. *apuo;* note change of vowel from *epuo,* 178.

183. 'These ten order-books are holily comprised (*guilul-seet,* 82) in two.'

188. *ipa-guena* = *ipa-guine* 'in those days' = 'at that time.'

190. *guilubuseet* 'blessed,' 82.

192. *epir-guine*, 99.

195. *oguigu-dani*, 106.

196. *ocua* 'promise' = 'give,' 95.

197. *-bu* + def. *-et*. Cf. *bu* in *chabu* and *bu* = *bie* 'wish, ought,' 173.

198. *e mejal-mala-te amal moga* 'the relations and neighbors'; a strange equivalent for 'the Holy Apostles.' *epincha-chul-bali-te* 'thought-not-with' = 'not with thought (word or deed),' the latter idea being expressed by *absogue-te chao* which seems to mean 'the saying (= intention) to do.' Note the *s* in *absogue* for *abchogue*. Strange to find *an nue nacpoe* 'my good fault' for 'my grievous fault;' why did not the translator use *istar nacpoe* 'bad fault?' On *nacpoe*, see 200. *tergui* may mean 'virgin' (?). *tar-ga* perhaps 'with her' = 'to her.' Note on the *tar*, 171. *an-pe-chuna-te;* lit. 'I tell you true' = 'invoke.' The word 'pray' = *onamaque* seems to be omitted, possibly by error of the copyist.

199. 'O my God that which I have done evil I tell.' *yancal-ba*, 136, 225, 229. *purcua* 'confess' (202); cogn. with *pur-mutaque* 'confess,' 203. *itogal* 'I obey all the priest says as to what I must do.'

200. *an-ataco* 'I hope;' same element as in *actacuela*, 64 (56).

an-nacpigu 'I grieve'; cogn. with *nacpoe* 'fault,' 198.

202. *pocuagua* must surely be an error, as it means 'twice,' but the context requires 'absolution.' This should perhaps be *purcua-gua;* cf. *i-purcua* 'confession,' 229. See note 199, and *pur-mutaque*, 203.

204. *chul-te-nal* 'a long time = *chul* 'not' + *te-nal* 'for this'; probably = 'now'; i. e., 'not now, not at present.' Cf. 34; 179.

206. *ab-cho-que-gal; ab* demonstr., for a similar combination, cf. *ibchae*, 155.

208. *impa-g-am-bali* 'often'; cf. 106.

214. *ne-quin* 'in this' = *ne-guin* 'here, present,' 30.

215. *chuman* 'week' = Span. *semana*.

217. *pi*, for *pe* 2 p.

219. Here and in 220, 221, 223, 224, 226, 228, *choque-gua* 'say' seems to be used like a past sign; in this case = 'have you?' *mumurgus*, 229.

225. *yancal-bal*, 136, 199, 225, 229.

229. *guiscugale*, 63; 64. *tua-tar* 'with sin,' 104. *tar*, 128. *mumuru* = *mumurgus*, 219. *pane-pane* is probably equivalent to *pali-pali* 'promiscuously,' 178. Note the *bel*-form with *b* for the usual *pel* 'all.' *nue ulucuja* 'well resting' seems to mean 'for a penance'; i. e., 'a means of rest' or 'peace.' *ila nercua pe onamaque chuli* = 'will you not pray it six times?' *i-purcua* 'confession'; cf. 202, *pocuagua*.

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SOME INDIAN STREAM NAMES

By GEORGE BIRD GRINNELL

Gros Ventres of the Prairie

THE Gros Ventres of the Prairie, a branch of the Arapaho, now live for the most part on the Fort Belknap reservation in northern Montana. They are known to the Blackfeet as *At-sē′-na*, which is translated Gut People. This name in the books is more commonly written Atsina, but as I have heard the name pronounced by the Blackfeet the *e* is long like *ay* in "hay." No one apparently has been able to account for their name Gros Ventres, but the addition of the words "of the Prairie" always distinguishes them from those Gros Ventres commonly spoken of as "of the Village," or "of the Missouri," otherwise called Hidatsa and Minitari, or Minnetaree.

They call themselves *Āh-āh′-nī-nī′*, meaning "clay people." Why they are so designated I do not know, but it possibly refers to their extensive use of white clay in painting themselves and in whitening the buffalo-robes which they tanned. The sign commonly given for them is the one interpreted to mean "big bellies," which Mr James Mooney explains as meaning "beggars" or "spongers."

Many years ago the late Hugh Monroe, who reached Fort Edmonton in the year 1814, told me that the Atsē′na had come into the plains country near the mountains not long before his arrival in the country, but General Hugh L. Scott[1] cites Legardeur de Saint Pierre as implying that the Gros Ventres were in the Blackfeet country in 1751.

The traditions of the tribe, so far as I have been able to learn them, are vague enough. They say that they separated from the Arapaho somewhere in the north, and that they themselves came

[1] The Early History and the Names of the Arapaho, *American Anthropologist*, N. S., vol. 9, p. 545.

from the north or the northwest. The Gros Ventres have the widely spread story of a division of the tribe by the breaking up of a frozen river, and believe that today, off somewhere in the northwest, a section of the tribe still exists. Some intelligent mixed-bloods declare that this story of breaking up of the ice in the river must refer to some ancient crossing of Bering strait. This story is told also by the Sarsi, Blackfeet, Bloods, Piegan, Cheyenne, Arapaho, and Crows, and very likely by still other peoples.

With the assistance of Charles Buckmann, of St Pauls, Montana, I recently recorded a few Gros Ventres stream names, which I here offer.

SASKATCHEWAN RIVER, north branch: *A͡ yāh' tă nō^{n}'*, 'Tall Trees' (river). (*ă yāh'*, 'tall', + *tă nō^{n}'*, 'trees or timber'.) So named because along that stream were many large cottonwoods.

SASKATCHEWAN RIVER, south branch: *Nŭt' nī tsēh'*, 'Belly river' (*nŭt*, 'belly', + *nītsēh'*, 'river').

MAIN SASKATCHEWAN RIVER: *I wăs' sĭ' nī tsēh'*, 'Elk river' (*ī wăs' sĭ*, 'elk', + *nī tsēh'*). Because many elk were found along this stream.

MILK RIVER: *Ĕ͡t sĕr' ĕ nī tsēh'*, 'Little river' (*ĕt sĕr'*, 'small', + *nī tsēh'*). Because on the prairie at its head it is a small stream.

CUTBANK RIVER: *Wăs ī' nī tsēh'*, 'Bear river' (*wăs ī'*, 'bear', + *nī tsēh'*).

MARIAS RIVER: Same as the preceding.

BADGER RIVER: *Băh' ū nī tsēh'*, 'Badger' (*băh' ū*, 'badger', + *nī tsēh'*).

TETON RIVER: *Īts tsī' tsī yā*, 'The Knees'. Named from a neighboring butte, which is so called from its supposed resemblance to a pair of bent knees.

SUN RIVER: *Tsĭn' ī nā āh' wā wă āh'*, 'Still Water' (*tsĭn' ī*, 'no', + *nā āh' wā*, 'moving', + *wă āh'*, 'water').

MISSOURI RIVER: *Bāās nī tsēh'*, 'Big River' (*bĕ nā thī' ŭ*, 'big', + *nī tsēh'*).

BELT RIVER: *Kā yā' tī hī nī tsēh'* (*kā yā' tī hē'*, 'belt', + *nī tsēh'*). The stream is named from the Belt mountains, which in turn are perhaps named from a butte standing among them which rises to a point, and part way up is encircled by a band of white rock—a belt about the butte.

JUDITH RIVER: *Nāhts nī tsēh'*, 'White river' (*nāhts ū'*, 'white', + *nī tsēh'*). It is related that in very early times a party of people who

were traveling came to this stream to cross it. It was high,—bank full,—and the water, colored by clay, was white; hence the name.

ARMELLS CREEK: *Āthē' ĭ hāh' wū' ka' auhk'*, 'Medicine Lodge creek' (*āh' thē' ĭ hāh'*, 'sacrifice or offering', + *wūh'*, 'lodge', + *ka' auhk'*, 'creek'). Because on the head of this stream was often held the ceremony of the Medicine Lodge.

MUSSELSHELL RIVER: *Wĭ' ĭ nī tsēh'*, 'Moonshell river' (*wĭ' ĭ*, 'moonshell', + *nī tsēh'*). It is not known how the river received this name. The moonshell is a polished marine shell received in trade and worn at the throat or on the head. It is possible that before the traders came, and before they knew the moonshell, they may have polished the shells of freshwater mussels (*Unio*), and used these in the same way that they afterward used the trade shells.

YELLOWSTONE RIVER: *Ī wăs' sĭ' nī tsēh'*, 'Elk river' (see Main Saskatchewan river, above).

BIG MUDDY: Flows into the Missouri river from the north, near Culbertson. *Săăb ŭd yŭk'*, 'muddy', because so miry to cross.

OWL CREEK, tributary of Big Horn river from the west below Big Horn hot springs: *Byā' tē nī tsēh'*, 'Owls' river' (*byā' tē*, 'owls', + *nī tsēh'*).

PRYOR CREEK, tributary to Yellowstone river from the south: *Ot' sū nī tsēh'*, 'Arrow river' (*ŏt' sū*, 'arrow', + *nī tsēh'*). Near the head of this stream, close to the mountains, is a little butte, and once when the Gros Ventres were passing this butte they saw many arrows stuck in the crevices of the rock; hence the name.

PLATTE RIVER—the main Platte and the North Platte rivers bear the same name as Musselshell river, but with the prefix "large": *Ab' ĭts wĭ' ĭ nī tsēh'* (*ăb'ĭts*, 'big', + *wĭ' ĭ*, 'moonshell', + *nī tsēh'*).

SOUTH PLATTE, Little Moonshell river: *Ĕts wĭ' ĭ nī tsēh'*, (*ĕtsĕr'*, 'small', + *wĭ' ĭ* + *nī tsēh'*).

PEOPLES CREEK: *Ĭ nĭt' ē ĭ kā' āuhk''*, 'Person's creek' (*ĭ nĭt' ē ĭ*, 'a person', + *kā' āuhk''*, 'creek'). Long ago, on this stream, a mare had a colt which had the head of a human being. The people used to speak of this colt as a person, and from the fact that it ranged on the stream they called this Person's creek. Previous to that time it had been called Grove creek: *Jā' ā ā kā' āuhk''* (*jā' ā ā*, 'group of shrubs or small trees', + *kā' auhk''*).

LODGE POLE CREEK: *Bŭ āh ĭn' ĭ nī tsēh'*, 'Red Mountain river' (*bŭ ĭ'*, 'red' + *āh ĭn' ĭ*, 'mountain', + *nī tsēh'*). So called because it comes down from a red hill in the Little Rocky mountains.

ROSEBUD RIVER: *Yă' nĭ nī tsēh'*, 'Roseberry river' (*yă' nĭ*, 'roseberry', + *nī tsēh'*). Named from the abundance of rose-bushes growing in the stream bottom.

TONGUE RIVER: *Ĭn nĭ tŭn' ĭ nī tsēh'* (*ĭn nĭ tŭn' ĭ*, 'tongues', + *nī tsēh'*).

POWDER RIVER: *Ĭ' tē nī tsēh'* (*ĭ' tă*, 'powder', + *nī tsēh'*). *Ĭ' tă'* is any fine powder that is black or dark-colored, and has been burned or in any way has had to do with fire (*ĕt' tĕ*, 'blaze, of fire'). The name no doubt refers to the black dust from the seams of lignite found along this stream.

BIG HORN RIVER: *Ŏt tē' ī nī tsēh'*, 'Wild Sheep river' (*ŏt tē' ī*, 'wild sheep' + *nī tsēh'*).

LITTLE BIG HORN RIVER: *Ĕts ŏt' tē ī nī tsēh'*, 'Little Sheep river' (*ĕts ĕr'*, 'small or little', + *ŏt tē' ī*, 'wild sheep', + *nī tsēh'*).

STINKING WATER: *Nī tsēh' wā s³ bya* (*nī tsēh'*, 'river', + *wā sĭ'*, 'bad', + *bya*, 'smell'). This name is usually explained as referring to the odor of sulphuretted hydrogen gas emitted by the hot springs on the river. The Gros Ventres, however, have another story which says that long, long ago, a great party of Gros Ventres on the warpath fought with the Shoshoni on the head of the Stinking Water and about sixty people were killed. The Gros Ventres kept on their way south, and on their return, when they passed the place where the bodies of the dead lay, the odor of decaying flesh was so offensive that they called the stream by this name.

GRAY BULL, tributary of Big Horn river from the west: *Ī̄ năt' sī nī tsēh'*, 'Bulls' river' (*ī năt' sī*, 'buffalo bulls', + *nī tsēh'*).

PAWNEE

Many years ago I made a few notes on some Pawnee stream names, chiefly of those in the country inhabited by the Pawnee previous to their removal to Indian Territory in 1874. At the time Mr J. B. Dunbar and Capt. L. H. North assisted me with the etymology of some of these names, kindnesses which I wish to acknowledge, although so tardily.

Very little seems to be known about the Pawnee language, though many years ago Mr Dunbar prepared a dictionary and grammar of this tongue, which, however, have never been printed, while the grammar, most unhappily, has been lost.

LOUP RIVER: *Īts' kă rĭ*, 'Many Potatoes', or 'Potatoes Plenty' (*ĭts*,

'potato', + *tĭ' kŭr ĭ*, 'it is abundant'). From the abundance of the root known as wild potato, or *pomme blanche* (*Psoralea*), which was found growing near its banks. Possibly this is a Skidi name. Mr Dunbar says that "the orthodox name of the Loup" is that which I know as applied to the Niobrara river.

NIOBRARA RIVER: *Kĭts kŭt ŭr' ĭ*, 'Swift Water' (*kĭts' ŭ*, 'water', + *tĭ' kŭt ŭr ĭ*, 'it is swift, it is rapid'). Commonly called Running Water by some Indian tribes.

CANADIAN RIVER: *Kĭts pā' hŭt*, 'Red Water' (*kĭts' u*, 'water', + *tĭ' po hŭt*, 'it is red'). From the color of the water.

SOLOMON RIVER: *Kĭts ĭ wĭts' ŭk*, 'Water over it' (*kĭts' ŭ* + *tĭ' kŭt ŭk*, 'it is above'). Named from the Sacred Spring situated on its banks; described in *Pawnee Hero Stories and Folk Tales*, p. 358.

SMOKY HILL RIVER: *Āh kau' ĭ ra ra kŭt a*, 'Yellow Banks' (*a kāu' ĭ ŭ*, 'bank', *ra*, 'sign of plural', + *tĭ' rŭk ŭt a*, 'it is yellow'). From the color of the soil through which it flows.

SALT FORK OF CANADIAN RIVER: *Kĭts' kā ŭt*, 'Salt river' (*kĭt'sŭ*, 'water', + *kai' ŭt ŭ*, 'salt'). From the taste of its water.

REPUBLICAN RIVER: *Kĭ' rā rŭ tāh*, 'Manure river' (*kĭts' ŭ* + *ŭt' ăt ŭ*, 'dung', or perhaps '*rā rŭ tāh*, 'it is filthy'). So called because of the enormous numbers of buffalo which resorted to it, polluting the waters.

PLATTE RIVER: *Kĭts' ka tŭsh*, 'Broad river' (*kĭts' ŭ* + *tĭ' kăt ŭs*, 'it is flat, shallow or broad').

ARKANSAS RIVER: *Kĭts kăh'*, or *Kĭts' kē ŭts*, 'Long river' (*kĭts' ŭ* and *tĭ' kē ŭts*, 'it is long').

MISSOURI RIVER: *Kĭts wăr' ŭks tĭ*, 'Mysterious water' (*kĭts' ŭ* + *tĭ wăr' ŭks tĭ*, 'it is wonderful'). The Pawnee greatly reverenced the Missouri river, which they called Medicine Water. See *The Story of the Indian*, p. 186.

SHELL CREEK: *Skā pĭr 'ĭ ŭs kĭts' ŭ*, 'Shell water' (*skā' pĭ rŭs*, 'clam-shell', + *kĭts' ŭ*). From the abundance of fresh water clams or mussels (*Unio*) found in it.

BEAVER CREEK: *Kĭt' ŭks kĭts' ŭ*, 'Beaver water' (*kĭt' ŭks*, 'beaver', + *kĭts' ŭ*).

WOOD RIVER: *Kĭts' ŭ lŭk' ĭs*, 'Wood water,' or 'Timber water' (*kĭts' ŭ*, + *lŭk' ĭs ŭ*, 'wood', 'timber').

LOOKING GLASS CREEK: *O ka tah' wĭ rĭk kĭt'sŭ*, 'Looking Glass water' (*o ka tah wĭ' rĭk*, 'a small hand-mirror', + *kĭt' sŭ*). From the reflection in its still water.

238 EAST FIFTEENTH STREET
NEW YORK

KICKAPOO ETHNOLOGICAL NOTES[1]

By WILLIAM JONES

MARRIAGE CUSTOMS

WHEN a man has made his acquaintance with a woman and is received by her with favor, he seeks entrance to her lodge. He goes there at night at an hour when the inmates are all asleep. He departs any time before the break of day. These visits last till the pair decide that they will become man and wife. Each will tell the parents at home the object of desire. The mother is usually the first to be told. The dialogue between mother and daughter may be something like this:

"My Mother, so-and-so has been coming to see me."

"That is good, my daughter. He is a good young man. He behaves himself. He comes of good family." The father and other near relatives, usually those advanced in years, will have a good word to put in.

The young man can say, "My mother, so-and-so has looked upon me with favor."

"That is good to hear, my son. Her parents are good. She obeys and does what she is told." The father and other near relatives of advanced age will add their say of approval.

The young man goes to the woman's lodge at evening and spends the night with her. This he does for two or three or more evenings and nights, leaving each time at morning. This marks the beginning of their career as man and wife. The next stage in the ceremony is a visit to the bride by a woman who stands in relation to the husband as a sister's daughter. She might be called his niece in English; she certainly would be if she was really the daughter of

[1] These ethnological notes on the Kickapoo Indians were found among the papers of the late Dr William Jones, and although brief are here published because of their intrinsic value. The belief that they should be printed exactly as given by Dr Jones and without comment has led me to confine myself strictly to editorial supervision. —TRUMAN MICHELSON, Bureau of American Ethnology, Washington.

a sister. She takes to the bride a horse and all kinds of presents. The horse can be given to an older or to a younger brother, and the presents must go to relatives who are to her as mother's brothers and as sister's sons. The bride then gives presents to the woman who brought the presents from the husband. Often more than one has brought the presents, but whatever the number of women they shall be to the husband as daughters of a sister. The presents given by the bride belong to the women only who came from the husband. No horse is given in return by the bride. Then the man and woman are married. They can live a while with the family of one or the other, but they go into their own lodge as soon as they can put it up.

MANITOUS

The name of the culture hero, the son of the manitou above, is *Wīza'käa* (z = θ); his younger brother is *Păpā'tăa*. The manitou of night is *tepe'kinenīa*. The term for death, manitou of death, disease, is *apanäeni*. The designation of a shadow, soul, is *nōgănāa*.

TERMS OF RELATIONSHIP

The terms of relationship are:

nōza = my father; *ōzăni* = his father; *ozwawa'į* = their fathers.
negya = my mother; *ugyăni* = his mother; *ugiwāwa'į* = their mothers.
nemecō'a, nemecōmeza = my grandfather; *omeco'wāwa'į* = their grandfathers.
nō'komeza = my grandmother.
negī'ą = my aunt, i. e., my mother's sister; *ugī'ăni* = his aunt.
nezegwiza = my aunt, i. e., my father's sister.
nōza = my uncle, i. e., my father's brother.
neciză'ą = my uncle, i. e., my mother's brother.
nezezăa = my elder brother.
nezīmă'ą = my younger brother, younger sister.
nemizăa = my elder sister.
nete'kwămą = my sister, said by masculine speaker.
netawămăą = my brother, said by feminine speaker.
nenegwă'ą = my nephew, i. e., my sister's son.
necemīą = my niece, i. e., my sister's daughter.
negwizą = my son.

negwizą = my nephew, i. e., my brother's son.
netänezą = my daughter.
netänezą = my niece, i. e., my brother's daughter.
nīnemwa = my sister-in-law, my brother-in-law.
nenegwăna = my son-in-law.
nahāganeʻkwăa = my son's wife.
nahāgana = my daughter's husband.
nemecōma = my father-in-law.
nōʻkomą = my mother-in-law.
nōcizema = my grandchild.
ānеʻkai nemecōʻa = my great grandfather.
aneʻkai nōcizemą = my great grandchild.
ānеʻkai = second.
nemezotāna = my father, my mother, my mother's younger sister, my father's younger brother.
netōtăma = my brother, my sister.
pecegwāʻa = divorced husband or wife.

The following are terms of direct address:

ănōze = O father.
nägye = O mother.
negwīhi = O my son.
netāha = O my daughter.
nōʻko = O my grandmother.
nemecą = O my grandfather.
negīhe = O my aunt.
necīze = O my uncle.
necémi = O my niece.
nenégwa = O my nephew.
nīnemwe = O my sister-in-law.
nōcīhi = O my grandchild.
nenegwane = O my son-in-law.
nōʻkome = O my mother-in-law.
nīʻka = intimate term of address between men.
iskwāʻe = intimate term of address between women.
pānia = he or she is out of mourning for a dead spouse.
nenāpăma = my husband.
nīwa = my wife.

To the above the following expressions may be added:

netcīnawämāa = I am related to him.
nenaʻänwänemāa = I am closely related to him, i. e., by blood.

nahāgăpia = he goes to live with his wife's people.
nahāgane'kwāią = she goes to live with her husband's people.
uce'kīhădgi = they adopted him (to take the place of a dead relative).
anōna'ši'ădgi = they adopted him (to take the place of a dead relative).
cīgāia = she is in mourning for her dead husband.
cīgāia = he is in mourning for his dead wife.
ināgōliădgi = they are related.

THE TRIBAL TWO-FOLD DIVISION

The tribe has a two-fold division. A member of the phratry that paints with charcoal (*ma'katāi*) is called *uskacą;* a member of the phratry that paints with white clay (*āpyäni*) is called *kīckō'ą*.

A child does not enter a phratry till after it has been given a name. The name comes from the father's name unless the right of naming the child is handed over to the mother by the father. If the father is *uskacą* then the offspring will be *uskacą*. If the mother is *kīckō'ą* and she has the right of giving the name, then the child is a *kīckō'ą*. Again, the child can become a *kīckō'ą* if he is given to a grandmother, grandfather, sister's son, or a sister's daughter; the child gets his name from the one in whose hands he falls and if the namer is a *kīckō'ą* the child will be a *kīckō'ą*. The division is for rivalry in athletics only.

CLANS

The clans are:

näpīizotcigi = they who are named from water.
mā'kwizotcigi = they who are named from the bear.
mācāizotcigi = they who are named from the elk.
mägezīizutcigi = they who are named from the bald eagle.
mā'tegwizutcigi = they who are named from the tree.
mīnizutcigi = they who are named from the berry.
pāpăgămōizutcigi = they who are named from the fox.
mā'wāizutcigi = they who are named from the wolf.
änenuswizutcigi = they who are named from the buffalo.
mā'tuzäneniizutcigi = they who are named from the man.
penäizutcigi = they who are named from the turkey.
näneme'kīizutcigi = they who are named from the thunder.

Henry Williamson Haynes

HENRY WILLIAMSON HAYNES died in Boston on February 16, 1912. He was an only son of Nathaniel and Caroline Jemima (Williamson) Haynes, and was born in Bangor, Maine, September 20, 1831. He prepared himself for Harvard College at the Boston Latin School and was graduated from Harvard with the class of 1851.

After teaching for one or two years he studied law and was admitted to the bar in Boston on September 26, 1856.

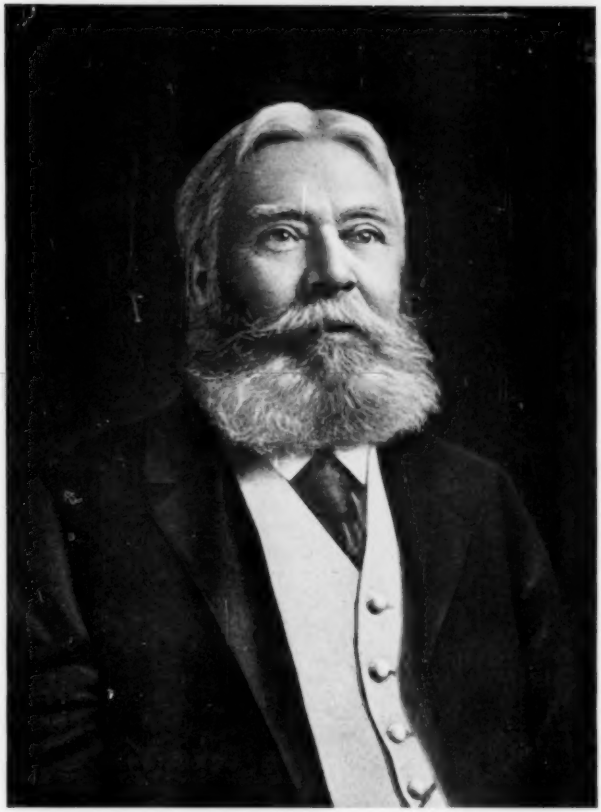
He became Professor of Greek and Latin in the University of Vermont in 1867, and in 1869 was made librarian of the same University; these positions he held until 1873, when he returned to Boston.

On August 1, 1867, he married Helen Weld Blanchard, daughter of John Adams and of Sarah (Harding) Blanchard; the wedding took place at the American Legation in Paris.

In intellectual life, among the positions held by Professor Haynes were the following: Membership in the board of trustees of the Public Library of the City of Boston, and the Boston School Board; a membership in the Massachusetts Historical Society and for some years in its council; in the Boston Society of Natural History, of which he had been vice-president; in the American Anthropological Association, the American Folk-Lore Society, and the Anthropological Society of Washington; in the Archæological Institute of America, of which he had been a member from its beginning and on whose executive committee he had served. These activities in the learned societies point plainly to his interests in life. Professor Haynes was primarily, in the old-fashioned sense, a man of "the humanities," i. e., "Grammar, rhetoric, poetry, and a study of the Greek and Latin classics," with—added to this—"humanity," which is Anthropology in its broadest acceptation. Professor Putnam defines the last as "man and his works"; possibly in this sense Anthropology may be considered to cover all the reading, writing, and work of this rich lover of mankind.

Of Professor Haynes' work in the broader field of literary activity, an interesting scrap-book gives a varied insight.

In re the future archeologist, mulling over the fallen civilizations of the present, Professor Haynes in the *Boston Courier* in 1860 quotes



Henry W. Haynes.

Kirke White's *Time* (1803): "Where now is Britain, etc." In 1861 we find him publishing a critique of Dean Milman's *History of Latin Christianity*. This includes a "Scholium" on "Mæcenas . . . qui uxorem millies ducit," exculpating Mæcenas, not without salt.

In the column of "Notes and Queries" in the public prints Professor Haynes was frequently present; his wide reading and exceedingly retentive memory made him an invaluable correspondent for those whose lack of knowledge leads them to seek such hebdomadal aids to the injured.

The classical knowledge of Professor Haynes was, strangely, both broad and deep; a student of literature rather than a philologist he preferred exegesis to etymology; of him could well be said the Terentian "Humani nihil a me alienum puto."

In the old days the test of classical learning was the composition of Latin verse. The following poem written on the occasion of the inauguration of the Memorial Statue of the Latin School Association may show how skillful a master of this art he was; the meter is the Asclepiadean Minor:

Heroum juvenum pro patria mori
Optantes animae! quale decus damus
Dignum pro meritis? Prosequimur quibus
Votis et lacrymis piis?

Hoc marmor vovimus, discipuli tui
Sculptum, cara parens, artificis manu,
Fraternis animis, cordibus aemulis
Grates testificans opus.
Immortalis honos, Famaque nobilis,
Mansurumque virens tempus in ultimum
Nomen, commemorans Gloria laudibus
Ornabunt statuam sacram.

O Natale Solum! numina dent tibi
Duris temporibus pectora fortia,
Prolem magnanimam, talia perpeti
Caris his Laribus satam.

Professor Haynes was a lecturer on Greek literature, and in 1873 wrote an account of the Westminster play for that year which happened to be the "Phormio."

With all Professor Haynes' appreciation of the value of the old-fashioned classical training for university students, he was no mere "Laudator Temporis Acti," teste the following quotation from the report presented by him to the board of overseers of Harvard College from the

"Committee on Greek" in 1893. The change from recitations to the lecture system was in process of fulfilment and at the time was considered a great innovation.

"How was it possible for any high standard of scholarship, anything better than bare mediocrity, to be expected of the student, when the whole class was held in check by the dead weight of all its dull and lazy members? . . . In the judgment of my classmate, Professor Goodwin, in which I fully concur, in our time fully three-quarters of the recitation hour was wasted, for the better scholars, in hearing those who knew nothing of a subject attempt to talk about it."

From Greek and Latin philology it is but a step to the archeology of classical lands, and nowadays it is but a step farther to the study of paleolithic and neolithic archeology on the one hand and to the archeology of America on the other.

Not so was it in the earlier times of Professor Haynes. King Minos had not yet erected the bridge over which one might pass from Phocis of the polished stones to Delphi of the Sun-god;[1] nor did men recognize the same beauty in the pottery of the White river in Arkansas as in that of the pre-Hellenic Mycenean layers. All the more honor, then, to those who could look at more than one stone at the same time, and look forward to the time when all things should take their own orderly place in a line determined not by time but by industries.

In American archeology his interest lay largely in the Southwest and the Mexican fields. This is proved by the long excerpts from the reports of the executive committee of the Archæological Institute of America found in his scrap-book. These are a report on Bandelier's work in Mexico in 1881, of Bandelier's researches in New Mexico in 1882 and 1883, and a report (1885) on the contributions of Lewis H. Morgan and the general published work of Bandelier.

The most important of the general articles by Professor Haynes are: "Progress of American Archæology during the years 1889–1899,"[2] and the chapters in Winsor's *Narrative and Critical History of America* on the "Prehistoric Archæology of North America" and "Early Explorations of New Mexico."[3]

In regard to the question of the antiquity of man in America his interest never flagged; he took a middle ground between those who acclaim each skull dug from the deeper depths and each culture not squaring

[1] Cf. *Amer. Jour. Archæol.*, Jan.–Mar., 1913, p. 107, quoting G. Soteriades, Πρακτικά, 1911, pp. 205–235.

[2] *Amer. Jour. Archæol.*, 2d ser., vol. IV, pp. 17 ff.

[3] Winsor's *History*, vol. I, pt. 2, pp. 329 ff., and vol. II, pp. 473–504.

at first sight with that of the red Indian as evidences of a plurality of races if not of ages of stone on this continent, and those on the other hand who "make all things new" and will not be persuaded though one rose from the dead.

Professor Haynes' conclusions at the end of his chapter on Prehistoric Archæology in Winsor may have been changed during twenty years of research, but as expressed by himself they are still capable of the support of a large circle of students: "That the so-called Indians, with their many divisions into numerous linguistic families, were later comers to our shores than the primitive population . . . that the so-called 'moundbuilders' were the ancestors of tribes found in the occupation of the soil; and that the Pueblos and the Aztecs were only peoples relatively farther advanced than the others."

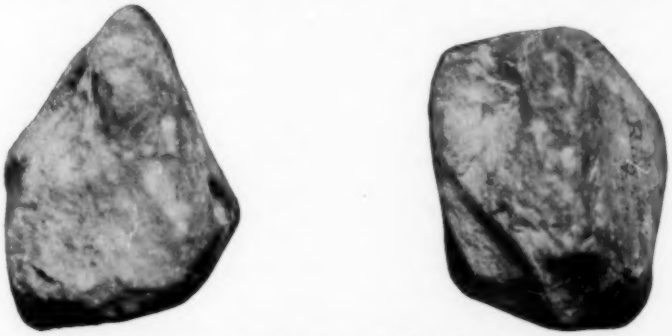


FIG. 53.—A "chopper" from Ridgefield, Connecticut.

An original contribution of Professor Haynes to the material bearing on early man in America was the discovery by him in New England of a primitive type of stone chopper.[1] This he brought out before the Boston Society of Natural History in the eighties, and he continued to hold much interest and faith in them until his death. These specimens are described in the catalogue which the present writer had the privilege of making in the presence of Professor Haynes, as: "Specimens representing a culture in America possibly more primitive than the paleolithic; they were collected in the majority by Professor Haynes from 1880 to 1890, and, often of white crystalline quartz, are of two types; they may

[1] Cf. *Proc. Boston Soc. Nat. Hist.*, vol. XXI, pp. 382 ff. (Feb. 1, 1882); also *Boston Transcript*, Feb. 2, 1882.

show a prepared cutting edge or a prepared point; the latter class resemble somewhat an Acheuléen '*coup de poing*' of the triangular type; they are found in northern Maine, New Hampshire, and Vermont, as well as in Connecticut, and in Massachusetts in the vicinity of Boston."

Professor Haynes was one of the very few Americans to take an active and a scientific interest in the congresses, discussions, collections, and researches in the field of prehistoric archæology abroad.

During his trip of 1877–1878 he found in Egypt a large number of stone implements of paleolithic type which he exhibited at the Paris Exposition of 1878, receiving a medal in recognition of the researches. Placing these on exhibition he made the following mention of the event in his diary: "Sept. 20, 1878: My forty-seventh birthday; up to anthropological exhibition at nine A.M.; met M. de Mortillet there and put my Egyptian flints into a case." This was Gabriel de Mortillet, perhaps the greatest of the "*préhistoriens.*"

Professor Haynes was very fond of meeting people of similar tastes and during his earlier trips abroad, beginning in 1873, he learned to know Dr Blackmore of the famous Blackmore Museum in Salisbury, John Evans, William Ransom, W. Boyd-Dawkins, Reboux, Laville, Baron de Baye, Abbé Ducrost, Perrin (Chambéry), Bonfils (Menton), Bellucci (Perugia), Giglioli, and many others. Visiting sites in company with these men he gathered a great deal of first-hand knowledge that stood him in good stead for nearly forty years.

His social gifts led him to enjoy scientific congresses, and it is worthy of note that he was present at the first Congress of Americanists, held in 1875 in Nancy. The appositeness of this inauguration of the international series of congresses is seen in the proximity of St Dié, whose recent festivities recall that the name "America" first came forth from the little town.

Professor Haynes was an indefatigable reader, and his command of many tongues, ancient and modern, prompted him to form a large library. Many of the books on prehistoric archeology are extremely rare in this country, and Harvard University is fortunate in having received these. They not only illustrate the progress of the science during fifty years, but are not by any means all put on the shelf as to constructive contribution.

It was in his capacity as a lover of specimens that Professor Haynes granted me the privilege of first knowing him well.

At the instance of Professor F. W. Putnam and myself, he consented to pass many hours, delightful for me, in assisting me to write a catalogue

of his European stone specimens as well as some of his trophies from America.

A short analysis of some of his specimens follows: Representing the so-called Eolithic period there are specimens from Alderbury, Stoke Pogis, Bradford on Avon, Windsor Park, Bath, Canterbury, and the vicinity of London. Also there are some of the Thenay flints, so far as is known the only ones in this country. These famous flints, though now discredited, are interesting as illustrating the Eolithic controversy and as representing the oldest claimed human industry until the discovery of the Boncelles specimens by Rutot and the Ameghino "discoveries" in South America.

In the paleolithic field England is represented by specimens from Bedford, Hitchin, and a good collection from the Creswell caves; France provided specimens from the classic station of St Acheul (a station apparently inexhaustible), from the valley of the Somme, and from the great caverns and rock-shelters of the Dordogne. He himself found the eponymous Éclats Levallois in and around Paris. Then there are the remarkable Egyptian paleoliths mentioned above.

His neolithic collection was exceedingly numerous and from widespread sites: Salisbury, Reculver, Torquay, Dunstable, Bath, Derby, the Thames valley, and other English places; Cæsar's Camp near Dieppe, and the famous Grand Pressigny; Scandinavia (Helsingborg and Lake Mälaren in Sweden, and Valsgard, Solager, and Kørsør in Denmark); Italian sites such as Perugia, Verona, Lake Trasimene, Bologna, Orvieto, Umbria, the Campagna, Albano, Sicily, and Gargano; Greece, Switzerland, and Germany, as well as later Egyptian sites—all these contribute a collection of stone implements that is equaled by not more than one or two expositions in the United States.

The set of beautiful pygmy flints from Egypt is only one of the elements worth particular notice in the collection. There are in all sixty-seven sections in the collection, and many minor subdivisions. In the Egyptian material there are forty-one trays; in addition there are some bronzes and considerable pottery.

These objects constitute only a part of what Professor Haynes gathered during his wanderings. Four beneficiaries received his collections: the prehistoric objects and all the books relating to them he left to the Peabody Museum of Harvard University; the Etruscan, Greek, and Roman vases, with the ancient coins and medals, to the Classical Department of Harvard University; the Egyptian collection, excluding the prehistoric flints, to the Museum of Fine Arts in Boston, and the

fossils, minerals, and numerous other specimens to the Boston Society of Natural History.

In spite of his wide interests abroad, Professor Haynes by no means neglected his own immediate neighborhood, as witness the hundreds of archeological specimens from New England included in the collections in the Peabody Museum. He was a man whose mind and heart were everywhere at home and with whom every man's mind and heart might find a home, if so be that they were wise, sound, and of good report.

Of my personal relations with him I can only say that there is but one thing for me to regret: that I wasted so much time before my short acquaintance with him began; the year that followed was one of increasingly intensive admiration and affection.

CHARLES PEABODY

CAMBRIDGE, MASSACHUSETTS

BIBLIOGRAPHY OF PROFESSOR HAYNES

PREPARED BY HIMSELF

Congrès International des Américanistes, Nancy, 1875, tome I, pp. 325 and 346.

Silex Acheuléens de l'Égypte. *Bull. Soc. d'Anthr. de Paris*, 1878, pp. 339 ff.

The Statue in the New Capitoline Museum at Rome called "Love disguised with the Attributes of Hercules." *Scribner's Monthly*, July, 1879, p. 461.

The Fossil Man. *Popular Science Monthly*, July, 1880, p. 350.

Review of the First Annual Report of the Archæological Institute of America. *American Art Review*, Sept., 1880, p. 496.

The Egyptian Stone Age. *Nation*, Jan. 27, 1881, p. 59. (See also Feb. 3, 1881, p. 74, and Jan. 5, 1882, p. 11.)

The Motto of the Massachusetts Historical Society, "Sic vov non vobis." *Proc. Mass. Hist. Soc.*, April, 1881, p. 402.

Note on the Couplet: "Inveni Portum, Spes et Fortuna Valete." *Notes and Queries*, 6th ser., vol. IV, p. 76, July 23, 1881.

Discovery of Palæolithic Flint Implements in Egypt. *Memoirs American Academy of Arts and Sciences*, vol. X, p. 357, Jan. 12, 1881.

The Argillite Implements found in the Gravels of the Delaware River at Trenton, New Jersey, compared with the Palæolithic Implements of Europe. *Proc. Boston Soc. Nat. Hist.*, vol. XXI, p. 132, Jan. 19, 1881.

What is the True Site of the Seven Cities of Cibola? *Proc. Amer. Antiquarian Soc.*, n. s., vol. I, p. 421, Oct., 1881.

Note on the Perforated Indian Humerus found at Concord, Mass. Ibid., vol. 2, p. 80, April, 1882.

Some Recent Studies in Prehistoric Archæology. *International Review*, Sept., 1882.

Note on English Versions of the "De Republica." *Nation*, no. 904, p. 355, Oct. 26, 1882.

Some Indications of an Early Race of Men in New England. *Proc. Boston Soc. Nat. Hist.*, vol. XXI, p. 382, Feb. 1, 1882.

Note on the Expression "Sweetness and Light." *Notes and Queries*, 6th ser., vol. V, p. 437, June 3, 1882.

Review of Bartlett's "Familiar Quotations." *Nation*, no. 910, p. 489, Dec. 7, 1882.

Some New Evidences of Cannibalism

among the Indians of New England, from the Island of Mount Desert, Maine. *Proc. Boston Soc. Nat. Hist.*, vol. XXII, p. 60, May 17, 1882.

Note on Lines in Moore's "My Birthday," beginning "Vain was the Man." *Notes and Queries*, 6th ser., vol. VI, p. 524, Dec. 23, 1882.

Note on Mr George P. Marsh, on the Word "Lovely" and the Phrase "Lie of the Land." *Nation*, no. 915, p. 37, Jan. 11, 1883.

Review of H. H. Bancroft's "Central America." Ibid., no. 917, p. 85, Jan. 25, 1883.

Review of de Mortillet's "Antiquité de l'Homme." *Science*, vol. I, no. 8, p. 222, Mar. 30, 1883.

Alnwick Castle Antiquities. Ibid., vol. II, no. 26, p. 136, Aug. 3, 1883.

Notes upon Ancient Soap-stone Quarries Worked for the Manufacture of Cooking Utensils. *Proc. Amer. Antiq. Soc.*, n. s., vol. II, p. 364, April, 1883.

Agricultural Implements of the New England Indians. *Proc. Boston Soc. Nat. Hist.*, vol. XXII, p. 437, Nov. 7, 1883.

"Human Proportion," by Robert Fletcher. *Science*, vol. II, no. 32, p. 354, Sept. 14, 1883. (See ibid., no. 37, p. 539, Oct. 19, 1883.)

Taylor's "Alphabet." *Nation*, no. 954, p. 313; and no. 955, p. 335, Oct., 1883.

Archæology in Portugal. *Science*, vol. II, no. 45, p. 764, Dec. 14, 1883.

Discussion of Professor F. W. Putnam's "Theory of Western Mounds." *Proc. Amer. Antiq. Soc.*, n. s., vol. III, p. 20, Oct. 22, 1883.

Human Bones in the Quaternary. *Amer. Antiquarian*, vol. VI, p. 61, Jan., 1884.

Gold Torques. Ibid., p. 135, March, 1884.

The Palæolithic Man. Ibid., p. 137, March, 1884.

The Bone Caves of Poland. *Science*, vol. III, no. 63, p. 489, Apr. 18, 1884.

Notes on the Sixteenth and Seventeenth Reports of the Peabody Museum. Ibid., no. 69, p. 668, May 30, 1884.

Note on the Fifth Annual Report of the Archæological Institute of America. Ibid., p. 670.

Report of the Council of the Massachusetts Historical Society for 1883. *Proc. Mass. Hist. Soc.*, 2d ser., vol. I, p. 168, Apr. 8, 1884.

Notes on Copper Implements of America. *Proc. Amer. Antiq. Soc.*, n. s., vol. III, p. 335, Oct. 21, 1884.

Note on the Phrase "To lay on load." *Nation*, no. 1010, p. 397, Nov. 6, 1884.

Letter on the Stone Age in Prehistoric Archæology. *Science*, vol. IV, no. 94, p. 469, Nov. 21, 1884. (See ibid., no. 96, p. 522, Dec. 5, 1884.)

Letter on Man in the Stone Age. Ibid., vol. V, no. 102, p. 43, Jan. 16, 1885.

Letter on Ben Jonson and Philostratus. *Nation*, no. 1020, p. 53, Jan. 15, 1885.

Anthropos and Anthropopithecus. *Science*, vol. V, no. 105, p. 104, Feb. 6, 1885.

Translation of Mortillet's Conclusions Respecting Early Man in Europe. *Science*, vol. V, no. 106, p. 136, Feb. 13, 1885.

The Prehistoric Congress at Lisbon. Ibid., no. 110, p. 218, Mar. 13, 1885.

Note upon the "American Journal of Archæology." Ibid., no. 114, p. 302, Apr. 10, 1885.

Remarks upon the Motto of Massachusetts. *Proc. Mass. Hist. Soc.*, 2d ser., vol. II, p. 40, March, 1885.

French Fabrications or Blunders in American Linguistics. *Proc. Amer. Antiq. Soc.*, n. s., vol. III, p. 475, Apr. 29, 1885.

Different Forms of Mourning. *Science*, vol. VI, no. 144, p. 406, Nov. 6, 1885.

Length of the Great Toe. Ibid., no. 146, p. 452, Nov. 20, 1885.

The Palace of the Kings of Tiryns. Ibid.,

vol. VII, no. 153, suppl. p. 37, Jan. 8, 1886.

The Races of Britain. Ibid., no. 155, suppl. p. 84, Jan. 22, 1886.

Death of Father Gaetano Chierici. Ibid., no. 157, p. 123, Feb. 12, 1886.

Location of Quarries Worked by the Indians for the Material for their Stone Implements. *Proc. Boston Soc. Nat. Hist.*, vol. XXIII, p. 333, Oct. 20, 1886.

Primitive Marriage. *Science*, vol. VII, no. 158, p. 147, suppl., Feb. 5, 1886.

Early Explorations of New Mexico. In Winsor, *Narrative and Critical History of America*, vol. 2, chap. VII, pp. 473 ff., 1886.

Notes Contributed to Sewall's Letter-Book, vol. I, p. 314. (See *Mass. Hist. Soc. Coll.*, 6th ser., vol. I, 1886.)

A Rare Coin of Constantine II. *Proc. Amer. Numis. and Archæol. Soc.*, N. Y., 1886, p. 14.

The Bow and Arrow Unknown to Palæolithic Man. *Proc. Boston Soc. Nat Hist.*, vol. XXIII, p. 269, Feb. 3, 1886.

The Americanists. *Science*, vol. VIII, no. 203, p. 588, Dec. 24, 1866.

Thayer's Greek Lexicon. Ibid., no. 204, p. 636, Dec. 31, 1886.

Methods of Arrow-Release. Ibid., vol. IX, no. 209, p. 119, Feb. 4, 1887.

Palæolithic Man in London and its Neighborhood. Ibid., no. 213, p. 221 Mar. 4, 1887.

Some Aztec Questions. See *Amer. Antiq.*, vol. IX, p. 107, Mar., 1887.

Explanation of New England Celibacy in Sewall's Diary. *Proc. Mass. Hist. Soc.*, vol. XXIII (2d ser., vol. III), p. 380, Oct. 13, 1887.

Early Schools of New England. *Proc. Amer. Antiq. Soc.*, n. s., vol. V, p. 7, Oct., 1887.

Norse Legends Respecting America. *Proc. Mass. Hist. Soc.*, vol. XXIV (2d ser., vol. IV), p. 42, Dec. 8, 1887.

Apocryphal Runic Inscriptions. Ibid., p. 55, Jan. 12, 1888.

Indian Wrist-guards. *Science*, vol. XI, no. 266, p. 121, Mar. 9, 1888.

Opinion on "Palæolithics." See *Amer. Antiq.*, vol. X, p. 125, Mar., 1888.

Goldsmid's Translations of Grotius on the Origin of the Native Races of America. See *Nation*, no. 1185, p. 216, Mar. 15, 1888.

Driving a Pin or Nail. *Proc. Mass. Hist. Soc.*, vol. XXIV (2d ser., vol. IV), p. 101, Apr. 12, 1888; ibid., p. 219, Dec., 1888.

Uncommon Words in a "Waste Basket of Words." *Jour. Amer. Folk-Lore*, vol. I, p. 161, Sept., 1888.

The Alabama Stone. *Proc. Amer. Antiq. Soc.*, n. s., vol. V, p. 487, Oct., 1888.

Concerning Certain Epigrams. See *Nation*, no. 1219, p. 376, Nov. 8, 1888.

Professor Lanciani and the Age of Bronze. See *Nation*, no. 1230, p. 69, Jan. 24, 1889.

The Prehistoric Archæology of North America. In Winsor, *Narrative and Critical Hist. of America*, vol. I, chap. VI, 1889.

Daniel Webster's Allusion to a Speech of Colonel Titus on the Exclusion Bill. *Proc. Mass. Hist. Soc.*, vol. XXIV (2d ser. vol. IV), p. 317, Mar., 1889.

Review of the Encyclopædic Dictionary. *Nation*, no. 1247, p. 429, May 23, 1889.

Recent Progress in American Archæology. *Tenth Ann. Rep. Archæol. Inst. Amer.*, May, 1889.

Cotton Mather and his Slaves. *Proc. Amer. Antiq. Soc.*, n. s., vol. VI, p. 191, Oct., 1889.

Review of Reinach's Description Raison. du Musée de St. Germain; Époque des Alluvions et des Cavernes. *Nation*, no. 1271, p. 376, Nov. 7, 1889.

Remarks on the Death of General F. W. Palfrey. *Proc. Mass. Hist. Soc.*, vol. XXV (2d ser., vol. V), p. 150, Dec., 1889.

Remarks upon H. C. Coote's "Romans in Britain." Ibid., p. 278, Jan., 1890.

Letter on "Supposed Aboriginal Fish-Weirs, near Naaman's Creek, Del."

Science, vol. XV, no. 369, p. 151, Feb. 28, 1890.

Letter to the Editor of the "American Anthropologist" on Major Powell's Article in the *Forum* on "Prehistoric Man in America." *Amer. Anthr.*, vol. III, p. 198, Apr., 1890.

The Historical Character of the Norse Sagas. *Proc. Mass. Hist. Soc.*, vol. XXV (2d ser., vol. V), p. 332, Feb., 1890.

Samuel Sewall and Sir John Beaumont upon the Tragedy of Blackfriars, Oct. 26, 1623. Ibid., p. 436, Apr., 1890.

Notes upon "Indian Hemp," "Tomahawks" and the "Self-Sown Wheat" of the Norse Sagas. Ibid., vol. XXVI (2d ser., vol. VI), p. 34, May, 1890.

The Roman Wall in Britain. *Bull. Amer. Geog. Soc.*, vol. XXII, no. 2, p. 157, June 30, 1890.

Palæolithic Implements Recently Discovered by W. C. Mills. *Proc. Boston Soc. Nat. Hist.*, vol. XXV, p. 49, May 7, 1890.

Taylor's "Origin of the Aryans." *Nation*, no. 1306, p. 36, July 10, 1890.

Otto Schrader's "Prehistoric Antiquities of the Aryan Peoples." Ibid., no. 1309, p. 92, July 31, 1890.

Webster's International Dictionary. Ibid., no. 1327, p. 445, Dec. 4, 1890.

Odysseus' Feat of Archery. *Amer. Jour. Archæol.*, vol. VI, p. 487, Dec., 1890.

Aboriginal Fire-making. *Am. Anthr.*, vol. IV, p. 44, Jan., 1891.

Letter on the "Skeleton in Armor." *Science*, vol. XVII, no. 416, p. 50, Jan. 23, 1891.

Translation of the Latin Version of the First Letter of Columbus Announcing the Discovery of America, with a Bibliographical Note. (Feb., 1891.)

Site of Ancient Wissagussett. *Proc. Mass. Hist. Soc.*, 2d ser., vol. VII, p. 29, Nov., 1891.

Winsor's "Columbus." *Nation*, no. 1384, p. 13, Jan. 7, 1892.

A Mock Charondas. Ibid., no. 1397 p. 265, Apr. 7, 1892.

The Question of the Celts. *Science*, vol. XIX, no. 479, p. 207, Apr. 8, 1892.

Leif Ericson and the Norse Sagas. *Proc. Mass. Hist. Soc.*, 2d ser., vol. VII, p. 349, Apr., 1892.

The Tertiary Man. Appendix to *Man and the Glacial Period*, by G. Frederick Wright, New York, 1892.

Nadaillac's "Prehistoric Manners." *Nation*, no. 1435, p. 500, Dec. 29, 1892.

Palæolithic Man in North America. *Amer. Antiq.*, vol. XV, p. 37, Jan., 1893.

Palæolithic Man in North America. *Science*, vol. XXI, p. 66, Feb. 3, 1893.

The Antiquity of Man. Ibid., p. 107, Feb. 24, 1893.

The Palæolithic Man Once More. Ibid., p. 208, Apr. 14, 1893.

Two Slips by Lowell. *Nation*, no. 1455, p. 367, May 18, 1893.

The Palæolithic Man in Ohio. *Science*, vol. XXI, p. 291, May 26, 1893.

Early Man in Minnesota. Ibid., vol. XXI, p. 318, June 9, 1893.

Further Evidence of Cannibalism among the Indians of New England. *Proc. Boston Soc. Nat. Hist.*, vol. XXVI, p. 29, Feb. 15, 1893.

The Flint Knife From Lachish. *Amer. Antiq.*, vol. XV, p. 306, Sept., 1893.

Report of the Committee on Greek to the Board of Overseers of Harvard College. No. XXXI, 1893.

Judge Sewall's Verses on the Merrimack River. *Proc. Mass. Hist. Soc.*, 2d ser., vol. IX, p. 7, Apr., 1894.

Catalogue of Greek, Etruscan and Roman Vases in the Museum of Fine Arts, Boston, by Edward Robinson. *Nation*, no. 1498, p. 200, Mar. 15, 1894.

Some Unwarranted Assumptions in Archæology. *Amer. Jour. Archæol.*, vol. IX, p. 26, Jan., 1894.

Palæolithic Pottery. *Science*, vol. XXIII, p. 161, Mar. 23, 1894.

Greek Vase Paintings. *Nation*, no. 1508, p. 394, May 24, 1894.

The Latin Play. *Harvard Graduates' Magazine*, vol. II, p. 515, no. 8, June, 1894.

Recent Palæolithic Discoveries in Foreign Countries. *Amer. Antiq.*, vol. XVII, p. 52, Jan., 1895.

The Odes and Epodes of Horace, Edited by Clement L. Smith. *Harvard Graduates' Magazine*, vol. III, p. 436, Mar., 1895.

The Migration of Symbols. *Nation*, no. 1559, p. 386, May 16, 1895, and no. 1560, p. 404, May 23, 1895.

Memoir of Edward Jackson Lowell. *Proc. Amer. Acad. Arts and Sciences*, vol. XXX, p. 562, 1895.

Shells as Implements. *Science*, n. s., vol. II, p. 593, Nov. 1, 1895.

Palæolithic Implements in Africa and in Burmah. *Amer. Antiq.*, vol. XVIII, p. 28, Feb., 1896.

Palæolithic Man in Minnesota. In *The Missouri River and its Utmost Sources*, by J. V. Brower, pp. 16–17, 1896.

A Grotesque Figurine. *Amer. Jour. Archæol.*, vol. XI, p. 150, Apr., 1896.

Remarks upon the Death of Ernst Curtius. *Proc. Mass. Hist. Soc.*, 2d ser., vol. XI, p. 118, Oct., 1896.

The Tertiary Man. *Amer. Antiq.*, vol. XIX, p. 149, May, 1897.

Memoir of Francis A. Walker. *Proc. Amer. Antiq. Soc.*, n. s., vol. XI, p. 284, Apr., 1897.

Note upon a Latin Inscription Published in the Proceedings of the American Antiquarian Society for October, 1880. Ibid., p. 258.

King Philip's Samp-bowl. *Amer. Anthr.*, vol. XI, p. 127, Apr., 1898.

Tribute to Mr William W. Greenough. *Proc. Mass. Hist. Soc.*, 2d ser., vol. XIII, p. 171, Oct., 1899.

The Writ and the Spade, Authority and Archæology, Sacred and Profane. *Nation*, no. 1817, p. 321, Apr. 26, 1900.

Memoir on Samuel Eliot, LL.D. *Proc. Mass. Hist. Soc.*, 2d ser., vol. XIV, pp. 105–126, Mar., 1900.

Progress of American Archæology, 1889–1899. *Amer. Jour. Archæol.*, 2d ser., vol. IV, p. 17, Mar., 1900.

Tribute to Mellen Chamberlain. *Proc. Mass. Hist. Soc.*, 2d ser., vol. XIV, p. 277, Oct., 1900.

De Roo, "History of America before Columbus." *Amer. Hist. Rev.*, vol. VI, p. 799, July, 1901.

"Variæ Auctoritatis." *Science*, n. s., vol. XX, p. 683, Nov. 18, 1904.

The Eolithic Problem. *Rec. Past*, vol. V, p. 83, Mar., 1906.

Memoir of Mellen Chamberlain. *Proc. Mass. Hist. Soc.*, 2d ser., vol. XX, pp. 119 ff., Mar., 1906.

Tribute to the Rev. Edmund F. Slafter. Ibid., pp. 425–426, Oct., 1906.

A Note on Judge Sewall's Diary. Ibid., p. 453, Nov., 1906.

Tribute to Professor Norton. Ibid., 3d ser., vol. II, p. 35, Nov., 1908.

The President's Inkstand. Ibid., p. 133, Feb., 1909.

Memoir of Elijah Winchester Donald. Ibid., vol. IV, pp. 460–488, Feb., 1911.

PROCEEDINGS OF THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

Meeting of October 15, 1912

THE 462d regular meeting of the Society was held in the new National Museum building on October 15, 1912, the president, Mr George R. Stetson, in the chair.

MAJOR RICHARD SYLVESTER, superintendent of police for the District of Columbia, read an interesting practical paper concerning *Criminal Characteristics*. It began with a brief review of the history of crime and the succession of different kinds of crimes prevalent at different periods, beginning with the cruder, such as homicide, and tending toward the subtler, so that quite recently the "green-goods man" has become less conspicuous than the forger or the embezzler. The General Government, it continued, has been urged to establish a national bureau of criminal identification, but such cooperative work has been left to the heads of American police departments.

Major Sylvester pointed out the practical difficulties of establishing a standard of the normal human being, and the imperfection of our distinction of criminals therefrom, since the police tests are applied only to those who have broken the law and many are non-criminal simply from lack of opportunity; also, we are learning that many cases of apparent criminality are only cases of mental defect or disease.

The popular impression of the criminal as a hungry, shifty individual is erroneous. The average man who makes crime a business in large cities is a fairly prosperous individual, with no fear of arrest. Some of the anatomical characteristics which Lombroso thought decisive of criminality are common in the lower races of man, whether criminal or not. Measurements in general would give racial characteristics rather than criminal. A number of criminals charged with murder were compared in detail, with the result of showing many varieties of human appearance bracketed together.

Some special kinds of crime call for physical peculiarities and develop them, but with these exceptions the criminal does not usually have a different aspect from that of other people, though both criminal and non-criminal persons of the police classification differ among themselves. Stress was laid on conditions as largely determining the category to which a man would belong.

Major Sylvester condemned the evil influence of politics in preventing the police of some large cities from bringing criminals to justice.

The paper was discussed by Drs Hrdlička, Frank Baker, Hough, Glueck, and others. The first two gentlemen chiefly emphasized the unreliability of external peculiarities relied on by Lombroso and of every sort of test which has been devised for general distinctions. Dr Hrdlička insisted that crime is a matter of the nerves and brain or the mentality, and criminal characteristics may be due more to organs and parts which are hidden than to the obvious and chiefly irrelevant external ones which Lombroso depended on for his diagnosis. Dr Hough chiefly explained tattooing as devoid of significance in primitive conditions, but in civilization a survival ordinarily indicating some weakness which might predispose to crime. Dr Glueck stated his practical experience in charge of the criminal branch of the Government Hospital for the Insane and the necessity which was felt of learning all about a man's past and conditions and his behavior at every stage of his life rather than trusting to his behavior or condition at the time of any one act as a proof of criminality.

Meeting of October 29, 1912

A SPECIAL meeting of the Society was held at 4:30 P.M., October 29, 1912, in Room 43 of the new National Museum building, the president, Mr Stetson, in the chair.

DR I. M. CASANOWICZ read a careful, thorough, and interesting paper on *The Mithra Cult*, explaining it as a religion of redemption, which was the most important competitor of Christianity during several centuries. He stated that it was Aryan in origin, antedating the separation of the Aryan people of India from the Iranians, that it was transferred westward by stages, accumulating elements in the Mesopotamian valley and the Mediterranean basin, but preserving an Iranian nucleus, and that it entered Rome as the religion of the poor and lowly, but was taken up by society when found helpful to imperial policy and made its first convert of an emperor in Commodus. Mithra was essentially the god of light, hence of truth and benevolence; and from the antithesis of light and darkness grew the conception of his war against the powers of evil. Zoroaster built his system on this dualism and conflict, though relegating Mithra to a lower place. Later he came to be regarded as occupying a middle place (on earth) between the powers of Heaven and the evil powers of the underworld, serving also as a mediator between man and the unapproachable supreme deity. The cult of Mithra, he said, had influenced Christianity, especially in the conceptions of the

powers of evil, the resurrection of the body, and the efficacy of sacraments, also as to the procedures of the church.

Meeting of November 19, 1912

THE 463d regular meeting of the Society was held in Room 43 of the new building of the National Museum at 4:30 P.M., November 19, President George R. Stetson in the chair.

MR JAMES MOONEY, of the Bureau of American Ethnology, lectured on *The Gaelic Language of Ireland*. The lecturer outlined the history of the Keltic nations, of whom the Gael of Ireland and Scotland are a part, from their first acquaintance with the Greeks about 600 B.C., down to the storming of Rome in 390 B.C.—the earliest authenticated date in Roman history—their alliance with Alexander the Great, their invasion of Asia Minor and colonization of Galatia in 278 B.C., and the final subjugation and Latinization of the continental Kelts by the Romans about the beginning of the Christian era.

Gaelic is the oldest living language in Europe, unless we except modern Greek, and it closely resembles Latin in many of its roots.

The Gaelic colonization of Ireland probably dated as far back as 1000 B.C. The island was known to the Greeks under a form of its native Gaelic name of Eire as early as four centuries before Christ. The ancient annals mention several earlier races or colonizations, the most important being the Firbolg, probably a part of the Belgæ of the continent. They continued to exist as a distinct people under their own chiefs up to the sixth century or later.

The alphabet of pre-Christian Ireland was the Ogam (Ogum), a system of straight lines or dots ranged along either side of a base line, and somewhat resembling a cross between the Morse alphabet and the cuneiform inscriptions. It was used chiefly for monumental inscriptions, and continued in use to some extent up to the tenth century. The modern Gaelic alphabet, consisting of seventeen letters, is an adaptation from the Roman.

Mention was made of some of the most ancient manuscripts, some of which have been already translated and others of which are now under translation by the Irish Texts Society. Under the Penal Laws, from 1691 until about 1800, the whole native population was practically debarred from education. Under the so-called National School System, established in 1831, the national language continued to be proscribed, resulting in its rapid decline. The great famine of 1845–47 with the ensuing wholesale emigration reduced the Gaelic-speaking population

by nearly one-half within twenty years, the great majority of those remaining being entirely illiterate. In 1878 the first concession to the native language was made by the national schools. In 1893 the Gaelic League, under the presidency of Dr Douglas Hyde, began an active propaganda for the restoration of the language to its proper status, with the result that it is now taught in 3,000 of the 8,000 governmental "national" schools, as well as in a large number of private and denominational schools; a whole flood of modern Gaelic literature covering every subject of intellectual interest is coming from the press, and the Gaelic language has been made an essential for matriculation in the new National University of Ireland beginning with 1913. Out of its own funds the league also maintains ten normal colleges for the training of teachers in the language, in several of which schools the entire course of instruction is through the Gaelic. The census just completed shows that Gaelic is still the home language of nearly 600,000 persons in Ireland above the age of three years.

Outside of Ireland the Gaelic speakers in Scotland, England, the United States, Canada, and elsewhere probably number considerably more than a million. Prince Edward Island and adjacent parts of Nova Scotia have a compact body of about 100,000, mostly descendants of emigrants from the Hebrides. In this country Gaelic instruction is now conducted in several universities, and a translation of the Rubaiyat, in Gaelic language and type, was recently published in Chicago.

Meeting of December 3, 1912

A SPECIAL meeting of the Society was held December 3, 1912, at 4:30 P.M., in the new National Museum building, Mr Stetson, the president, in the chair.

MR WM. H. BABCOCK read a paper on *The Islands of Antillia*, illustrated with lantern-slide maps, taking the above title from Peter Martyr's "Decades of the New World," where that author, in view of "the cosmographers," states that he believes these islands were what his contemporary, Columbus, had discovered. Peter Martyr's own sketch-map of 1511 was exhibited, showing Florida as one of them under the name of Beimeni; also the maps of Beccaria, Bianco, Pareto, and Benincasa, from 1435 to 1487, who may be among "the cosmographers" referred to. They show a group of four large islands (as do also the maps of Roselli, 1468, and Bertran, 1489) roughly corresponding in size, arrangement, and other respects with Cuba, Jamaica, Florida, or Beimeni, and Andros of the Bahamas, and bear on Beccaria's map

the names Antillia, Reylla, Salvagio, and Insula in Mar (Opposite Island or Island out Before, King Island, Savage Island, and Island in the Sea). These are nearly as far west of the Azores as the latter are west of Europe, and in such a location must be either the creatures of mere fancy or appurtenances of America. But it is not likely that mere guesswork could produce the remarkable correspondences of these great map islands with the reality, such an island group being altogether unique in the Atlantic.

Behaim's globe of 1492 contains an inscription to the effect that a Spanish vessel visited Antillia in 1414, more vaguely endorsed by another on the map of Ruysch (1508) which credits the Spaniards with finding Antillia long ago. That something of the kind happened in the first quarter of the fifteenth century may be inferred from the fact that Beccaria (1535) names the group collectively "The Newly Reported Islands," most likely borrowing this title legend from an earlier map, although the fourteenth-century maps contain no delineations of Antillia and her consorts.

The other fifteenth-century maps named corroborate Beccaria, being very consistent in outline and arrangement so far as they go, although two of them give but three islands, and Biarco shows only Antillia and a part of Salvagio, which he calls La Man de Satanaxio, but this last seems to be a case of mutilation or limitation by the western border of the parchment. However, the Laon globe of 1493 shows only these two main islands.

A current map showed how naturally any craft entering and continuing in the great sea current which sweeps from the Azores and the other eastern islands westward to the Antilles would be carried to Cuba and her neighbors.

The Catalan map of 1375 and the Pizigani map of 1367 with its picture of St Brandan blessing his Fortunate Islands of Porto Santo and Madeira and the figures of a dragon and a dentapod, each carrying off a seaman from his ship as a warning against westward exploration, were also exhibited. They show the circular island of Brazil west of Ireland and the more southerly crescent-form Man or Brazir, both being important and persistent legendary islands; and the Catalan map in particular shows all the Azores approximately in their real grouping, but neither of them presents any insular forms like those of the Islands of Antillia.

Dr Philip Newton read a paper on the *Negritos of the Philippines*, estimating their total number (full-bloods) at 5,000, though by counting mixed-blood tribes and individuals the estimate is sometimes carried up

to 25,000. They are distributed through numerous islands, though not reported from Mindoro. The greater number are on Luzon. There is no difference in them, except as their blood is mingled with that of neighboring races. They are not fishermen, but hunt and gather natural products, using in some districts poisoned arrows, the symptoms of poisoning being like those of strychnine. Their houses are made of upright poles connected by horizontal poles having crosspieces and leaf thatching. The dead are buried under or near these homes. They rarely bathe, and their clothes (which are breech-clouts or aprons) are apparently never washed. Usually these are of cloth obtained in trade, but in some islands, for example Palawan, bark is used. Negritos do not regularly practise agriculture, but will sometimes plant rice—and perhaps move away before it ripens. A skin disease is the most prevalent among them, but malaria also prevails. Three incipient cases of tuberculosis were noted. Some other diseases are derived from their neighbors.

Meeting of December 17, 1912

THE 464th regular meeting of the Society was held at 4:30 P.M., December 17, 1912, in Room 43 of the new building of the National Museum, the president, Mr Stetson, in the chair.

PROF. C. V. PIPER read a paper on *The Filipinos and the Problem of their Government*, beginning by a general résumé of the insular conditions and various peoples dwelling in the Philippines, of whom he said the Negritos, now found mainly in four islands but once in nearly all, are generally regarded as the original inhabitants, the Igorrotes and other wild tribes being the next to arrive, the Filipinos next (perhaps about 500 A.D.), and the Moros last, about the time of the Spanish occupancy. At some length Professor Piper described the Filipino characteristics, distinguishing between the small educated minority and the majority of ignorant laborers. His conclusion was that immediate independence would be injurious, but that our Government should establish some limit in the future, defined by conditions of education of the majority of the race. The most remarkable thing we are doing there, he said, is the attempt, for the first time in history, to educate an inferior people *en masse*. The Asiatic European colonies have little faith in its success, but are influenced by it and our general policy.

DR RILEY B. MOORE read a paper on his *Observations in St Lawrence Island*, one hundred by thirty miles of treeless swamp and tundra inhabited by some two hundred and fifty people, the débris of five different tribes in Bering sea. Some of these resemble Sioux Indians;

others are typical Mongolians, with all intervening kinds. In summer they have a profusion of birds and fish to feed on; but in other seasons their food is whale-meat, seal-meat, and walrus-meat. They live with little ventilation and have many skin diseases. Tuberculosis also is very common. The death-rate has long exceeded the birth-rate.

Meeting of January 7, 1913

A SPECIAL meeting of the Society was held January 7, 1913, in Room 43 of the new building of the National Museum, the president, Mr George R. Stetson, being in the chair.

MR E. DANA DURAND, Director of the Census, read an important paper on *Race Statistics of the Last Census*, replete with interesting facts. Mr Dana said, *inter alia*, that during the decade 1900–10 the white population of the United States increased about 22 per cent. and the negro about 11 per cent. This difference is partly due, however, to the direct or indirect effect of immigration of whites, in the absence of which the whites would have increased about 14 per cent. The Indians increased about 12 per cent., the Chinese decreased in number, while the Japanese nearly trebled. The whites have at practically every census shown a more rapid rate of increase than the negroes, and there is reason to believe that the difference between the two races in this regard from 1890 to 1900 was greater than appeared from the census returns, on account of a probable underenumeration of the negroes in 1890. The census of 1910 showed that about 21 per cent. of the negroes are mulattoes, as compared with about 12 per cent. in 1870, the last preceding census at which the question regarding blood mixture was asked in comparable form.

There has been no very great migration of negroes out of the South, nearly nine-tenths of the total number being still found in that section. The number living outside the South increased 167,000 between 1900 and 1910, while the number residing in the South increased more than 800,000. The rate of natural increase—that is, by excess of birth over deaths—of the white population of the South, however, is much higher than that of the negroes, being higher also than that of the whites in the North.

Among the native white population whose parents were born in this country, there were, in 1910, 104 males to each 100 females, as compared with only 98.9 in the case of the negroes. Among all classes of the population more boy babies than girl babies are born, but equality tends to be brought about by a higher death-rate among the males. The

difference in sex distribution between the whites and the negroes is probably attributable, in part at least, to more favorable health conditions among the whites.

The age distribution of the native white population is somewhat different from that of the negroes, probably chiefly on account of a lower death-rate among whites, tending to greater longevity. There has apparently been a very marked decline in the birth-rate among negroes in recent years, while there has been a gradual but less marked decline in the birth-rate of the whites during each decade for a long period of time.

Negroes tend to marry earlier than the native white classes; and, in fact, at all age periods the proportion of married, widowed, and divorced persons, taken together, is higher in the case of the negroes of both sexes than in the case of the native whites of native parentage.

There has been a marked change in the composition of the foreign-born population of the United States during recent years. Natives of northwestern Europe constituted more than two-thirds of the total foreign-born population of the United States in 1900, but less than half in 1910, while southern and eastern Europeans formed only a little more than one-sixth of the total at the earlier census, as compared with three-eighths in 1910. The Germans and the Irish particularly have fallen off conspicuously in numbers, while the natives of Russia—largely Russian Jews and Poles—Austria, Hungary, Italy, Greece, and other countries of southern and eastern Europe have increased by very high percentages, no less than 1,090 per cent. in the case of natives of Greece. The natives of Russia now rank second among the foreign-born classes, and those of Italy fourth.

The speaker answered inquiries of various members as to sundry items, and these questions were accompanied by brief statements contributing further facts and explanations.

Meeting of January 21, 1913

THE 465th regular meeting of the Society was held in the National Museum at 4:30 P.M., January 21, 1913, the president, Mr George R. Stetson, in the chair.

DR TOM A. WILLIAMS read a paper on *The Dream in the Life of the Mind*. Dr Williams said trance, vision, ecstasy, and disease delirium are closely allied to the dream state. The psychopathology of them all illuminates formerly uncomprehended diseases. In a dream (illustrated by a case) mental perturbation may crystallize, as it were, and lead to rampageous behavior. On the contrary dreams may be teleo-

logically beneficial; as where a vision saved a young woman from suicide, as was the case also with Benvenuto Cellini. They are more often a mere reproduction of former experiences more or less significant and more so in psychopathic individuals, such as in a young hysteric who dreamed of falling down wells, assassinations, and death, all painful experiences of her childhood.

Dream-thought, apparently confused, is really significant of the mental trend of the individual, when properly analyzed and interpreted. One dreams all the time, but recollects only that dreamed within seven minutes of waking. The form of dream can be determined by external stimuli. This is demonstrated in spite of its contradiction by some psychopathologists.

Meeting of February 4, 1913

A SPECIAL meeting of the Society was held on February 4, 1913, at 4:30 P.M., in Room 43 of the new building of the National Museum, the president, Mr George R. Stetson, in the chair.

DR CLARK WISSLER, curator of the department of anthropology in the American Museum of Natural History, New York, read an elaborate and philosophical paper on *The Doctrine of Evolution and Anthropology*.

The lecturer distinguished between cultural phenomena on the one hand and biological on the other, especially making clear that cultural phenomena are not inherited, though the instinct to develop culture, or to invent, is most certainly inborn. It was suggested that the historical attitude of present-day anthropology should be taken as expressing the cultural point of view. Culture itself seems to be associated habit complexes or constructs of the mind and not to be in any way innate or inborn, but to be an external affair, preserved and carried on entirely by learning or educating processes. Cultures develop and have an evolution of their own, but since they are not inherited they can not be considered parts of a biological development. They are most assuredly facts of another order. Being products of the mind, the only limitations put upon them are to be sought in the mind itself, since psychologists tell us that we have in the main only an associated cultural whole, resolvable into psychological elements, and since this, in turn, is only a matter of invention and not of cell differentiation. Being a matter of invention, the genetic relationship becomes purely a matter of history, since we can not foretell what the relationship is.

The psychophysical mechanism of man is biological and innate and

constitutes man's equipment for the production of cultures. Anthropology holds that the mechanism is general in so far as it is not limited to any particular culture, and that it enables the individual to practise any culture he may meet, though not necessarily to equal degrees.

When we come to consider the biological theory of evolution we find that it applies to the psychophysical mechanism but not to culture. For cultures we must have another point of view or theory, and this in America, at least, is the historical or cultural conception. This conception is in general that cultural traits are the results of invention, a mental process, and their development or evolution is to be taken as a historical and psychological problem.

The paper was briefly discussed by Dr Folkmar, Dr Swanton, and Dr Hough.

Meeting of February 18, 1913

THE 466th regular meeting of the Society was held in Room 43 of the new building of the National Museum at 4:30 P.M., February 18, 1913, the president, Mr George R. Stetson, in the chair.

PROFESSOR W. H. HOLMES delivered an address on *The Agricultural Implements of the Mound-builders*, in which he stated that the rich alluvial and prairie country of the middle Mississippi valley is especially adapted to the practise of primitive agriculture, and here are found large numbers of skillfully made flint blades of large size suitable for hafting as hoes and showing unmistakable evidence of long usage in operations that gave the working end a high degree of polish. They are made of grayish flint or chert which occurs plentifully in the form of flattish nodules in southern Illinois. These nodules were readily shaped by fracture with stone hammers, and vast numbers were gotten out and worked up by the mound-building tribes. The processes of manufacture were demonstrated by the speaker, and it was shown with what ease and rapidity the blades could be made.

It was also shown by examples obtained from the Missouri River tribes that hoes made of the scapulæ of the buffalo were in use in very recent times and that the hoes found in excavating ancient sites near Omaha correspond with these recent Indian forms both in shape, manner of hafting, and surface polish, and that both display, although in bone, precisely the same kind of polish and markings as do the similarly shaped hoes of flint. It was suggested that these flint hoes were modeled after scapular hoes, since these were in general use by the tribes and have doubtless been in use from very early times among all the tribes advanced to the sedentary agricultural stage of culture.

Referring to questions of antiquity which have been raised recently in regard to the burials of the Omaha district, it was suggested that since the buffalo was a comparatively recent arrival in the Mississippi valley, a culture in which the bones of buffalo are represented must be younger, not older, than that of the mound-builders, since no traces or pictorial representations of the buffalo are found within the older Indian mounds.

The paper was briefly discussed. Mr Stetson read notes on certain implements lately found in Britain. Professor Holmes commented concisely thereon.

PROFESSOR HOLMES then read a paper on *Scope and Relationships of History and Archeology*, which embodied in outline a study of the nature and scope of archeology and of archeological research as related to the field of human history as a whole. The history of man, or anthropology, according to Powell's classification, may be considered under seven heads or departments, giving rise to as many branches of research, as follows: somatology, psychology, philology, sociology, sophiology, technology, and esthetology. In working out its problems each of these seven branches employs every available agency of research within and without its particular field and makes use of every form of record in which the history of man is embodied.

The records or sources of information to be drawn upon in these researches are comprised under two principal heads: intentional or purposeful records on the one hand and non-intentional or fortuitous records on the other.

The intentional records are of four forms, as follows: (1) pictorial or pictographic; (2) commemorative, taking the form of monuments; (3) mnemonic, in the form of tradition and lore, orally transmitted; (4) inscribed or written records. Fortuitous records take numerous forms: (1) the diversified material results of human activities in which the commemorative motive is absent, but which comprise the great body of the products of handicraft; (2) the immaterial results of human activity as embodied in language, beliefs, customs, music, philosophy, etc.; (3) the ever-existing unpremeditated body of memories which accrue to each generation and are in part transmitted adventitiously; (4) the record embodied in the physical constitution of man which when properly read tells the story of his development from lower forms; (5) the record of intellectual growth and powers to be sought and studied in the constitution of the mind; (6) the environments which reveal the story of the nurture and building up of the race throughout the past.

It is from these diversified records of present and past times that the

story of the seven grand divisions of the history of man must be drawn. Archeology stands quite apart from this classification of the science, transversing in its own way the entire field of research. It claims for its own more especially that which is old or ancient in this vast body of data. It is even called upon to pick up the lost strands of the earlier written records, as with the shadowy beginnings of glyphic and phonetic writing, and restore them to the historian. It must recover the secrets of the commemorative monuments, the tombs and temples intended to immortalize the now long-forgotten great. It must follow back the obscure trails of tradition and substantiate or discredit the lore of the fathers. It must interpret the pictorial records inscribed by the ancients on rock faces and cavern walls which men meant should last forever. All that archeology retrieves from this wide field is restored to human knowledge and added to the volume of written history.

The services of archeologic science are equally potent in the field of the fortuitous records of humanity, for it reads that which was never intended to be read. The products of human handicraft, present and past, which have recorded automatically the doings of the ages are made to tell the story of the struggles, the triumphs, and the defeats of humanity. The fortuitous records embodied in the non-material products of man's activities of to-day, although in themselves not antiquities, are made to cast a strong light on the history and significance of the material things of the past. Even the body of knowledge gathered from many sources and stored in the memory of the living, though unreliable and transient as a record, may be made to illumine the past; and the physical and psychical characters of man are in themselves records and may be made to tell the story of their own becoming and to explain the activities and the products of activity throughout the ages. All that archeology gathers from this wide field of research is added to the volume of written history.

In the great work of assembling the lost pages and completing the volume of the history of man, archeology may well claim first place among the contributing sciences.

This paper was discussed by Messrs Casanowicz, Carroll, Stetson, Babcock, Hewitt, Swanton, and Neumann.

Meeting of March 6, 1913

A SPECIAL meeting of the Society was held March 6, 1913, at 4:30 P.M., in the auditorium of the new building of the National Museum, the president, Mr George R. Stetson, in the chair.

DR WALTER HOUGH read a paper on *Savage Mutilations for Decoration.*

The paper was a short excursion into the enormous field of custom with regard to ethnic mutilations, and sufficient examples were given to lay the subject rather completely before the Society. In it were described the most striking forms of head-shaping by pressure in infancy: the various forms of teeth mutilations; ear, nose, cheek, and lip modifications and ornaments; pressure and mutilations in the arms, waist, and limbs, and modifications of the bones of the feet. With mutilations also should be considered, perhaps, extraordinary hair-dressing and treatment of the finger-nails.

Many slides were shown of tattooing, scarification, and decoration of the skin by means of dyes and pigments, and some of their multifarious meanings given. On the whole, it was concluded that ethnic mutilations originated from many concepts, the more important being a desire for identification, in some cases individual, but in most cases tribal; a desire for ornamentation, mainly individual in its treatment, but following environmental and tribal fashions; and also very important mutilations growing out of religious ideas.

Many ethnic mutilations also relate to sex, puberty, social rank, honor for warlike feats, and the like. All these ideas, which at times have been advanced as the explanation of the causes, show that the matter is extremely complex. The bearing of ethnic mutilations on primitive surgery was also hinted at, as well as its effects on the development of costume.

Dr Williams and Dr Swanton made certain inquiries and brief remarks which Dr Hough answered.

Meeting of March 18, 1913

THE 467th regular meeting of the Society was held in Room 43 of the new building of the National Museum at 4:30 P.M., March 18, 1913, the president, Mr Stetson, in the chair.

DR JOHN R. SWANTON read a paper on *The Creek Confederacy.*

After explaining the geographical and linguistic positions of the tribes of the Creek confederacy with the aid of a map, Dr Swanton traced the evolution of the confederation from a small nucleus of tribes speaking the Muskogee language to a large association, comprising a number of Hitchiti-speaking people, the Alabama, Koasati, some of the Apalachi and Yamasi, part of the Natchez, the Yuchi, and, for a time, some of the Shawnee. He showed that this association was facilitated through the institution of a dual division of towns into white or peace towns and

red or war towns, the towns of each division, or "fire," considering each other friends or allies, and having opposing but not warlike relations with the towns of the other "fire". It thus happened that when an outside town or tribe came to be accepted as a "friend" of one of the white or red towns in the confederacy, its position with reference to all the other white and red towns was thus established and it entered into the confederate scheme. The communication of other common features to the new towns also took place, although more slowly. Such features were the "green corn dance," or busk, or perhaps rather the Muskogee form of it, participation in common although irregular councils, and the adoption of Muskogee as the standard language of intercommunication. The actual discontinuance of the proper languages of the various members of the confederacy was, fortunately for the ethnologist, much slower, several of them having persisted to the present day. Through the progressive adoption of smaller tribes and the practical destruction of some in warfare, a process accelerated by white contact, the Creek confederacy came to be almost the sole representative of eastern Muskhogean culture, and even influenced the culture of the Chickasaw to a marked degree. The great Choctaw body, on the other hand, maintained its cultural independence and was never dominated by the Creeks. In sharp contrast to the Creeks, whose national structure was built up by fitting numerous distantly related tribes into an artificial fraternal scheme, the Choctaw seem to have owed their sense of unity to an actual homogeneity in the Choctaw population, the occupancy of a common area, and the necessity to resist common enemies. They perhaps preserved the simplicity of culture existing among all Muskhogean Indians in times long anterior to the formation of more complicated associations or confederacies.

Meeting of March 25, 1913

A SPECIAL meeting of the Society was held at 4:30 P.M., on March 25, 1913, in Room 43 of the new building of the National Museum, the president, Mr Stetson, in the chair.

DR GEORGE GRANT MACCURDY read a comprehensive paper on *Ancient Man, His Environment and Art.*

This paper dealt with the environmental factor in human development; the newly discovered human remains from Piltdown, Sussex, and their significance; recent finds in the terraces of the Somme valley; San Isidro, near Madrid; Torralba, a large camp-site in the province of Soria, Spain, where a rude stone industry associated with an ancient

fauna has been found; caves on the Island of Jersey occupied by Mousterian man; typical caves and rock-shelters of southern France: La Quina, La Ferrassie, Placard; the art of the cave man in France and Spain: Altamira, Castillo, La Pasiega, Covalanas, Pindal, Font-de-Gaume, Cap Blanc, Niaux, Gorgas, Laussel, Alpera, Cogul; representations of the human form; La Combe, a cave in the Dordogne excavated last summer by Professor MacCurdy; Tuc d'Audoubert, a Pyrenean paleolithic cavern of great beauty discovered last July; its parietal art and the unique figures of the bison modeled in clay; paleolithic art in its relation to magic; some of the causes which led to its development and eventually to its decay.

The lecture was based largely on first-hand observations by the lecturer during last summer. The lantern slides reproduced faithfully in color the remarkable paleolithic cavern frescoes. The epochs covered by the lecture, beginning with the oldest, are: Eolithic or pre-Chellean, Chellean, Acheulian, Mousterian, Aurignacian, Solutrean, Magdalenian, and Azilian. These are all pre-Neolithic.

Several questions were asked and answered.

Meeting of April 1, 1913

A SPECIAL meeting of the Society was held in Room 43 of the new building of the National Museum at 4:30 P.M., April 1, 1913, the president, Mr Stetson, in the chair.

DR J. H. GORE, who had recently returned from a visit to the King of Siam, read a paper on *Siamese Life and Industries*, profusely illustrated with lantern slides. The former included fine basketry, bronze vessels, silver vessels, matting, textile fabrics of silk and other material, and hammered silverware of admirable workmanship, the method of production being to fill a silver vessel with sand and hammer in the surface from the outside to form the ground, leaving the decorative human figures in series (beside other ornaments) in high relief. Usually the figures represent some mythological story. Dr Gore's lantern-slide pictures of Siam included many farm-scenes, illustrations of games, festivities, and elephant-capturing, and views of the city of Bangkok, the aquatic human life of its rivers and canals, the palace, imperial crematories and temples, one of the latter being an exceedingly beautiful rock-cavern temple of great renown.

Dr Gore explained that the teak-wood forests and rice culture are among the chief resources of the country, most of the ship-decks of the world being supplied from the former, now managed by an expert forester,

and the export of rice being very great. About seventy rice mills of modern equipment are operated in Bangkok, besides a large amount of similar work done by more primitive methods and appliances throughout the country. The soil is of the highest fertility and unequaled depth in the main valley of the kingdom. There are about eighty miles of good roads around Bangkok, and the streets of the city are well made, modern street-car lines running on some of them; but the remainder of the country is practically without roads.

The late king was notable for divers modern and enlightened reforms, such as freeing slaves, relinquishing the royal ownership of the land in favor of those who had been long in occupancy and use of it, waiving the exemption of the royal lands from taxation, and compiling and publishing an edition of the Buddhist scriptures, which he supplied to the libraries of the world.

The inhabitants of Cambodia, he said, are nearly of the same stock as the Siamese, but regarded as inferior by the latter people, whose language is nearly akin to the Sanscrit. The human images before their temples are not idols, but for ornament. There is a flame-like upward aspiring tendency in their decorative work. No magical or religious importance is attached to white elephants, so called, which are albinos, white only in patches; but these are regarded as rarities and curiosities, and as such are given to the king.

Meeting of April 15, 1913

THE 468th regular and 34th annual meeting of the Society was held in Room 43 of the new building of the National Museum at 4:30 P.M., April 15, 1913, the president, Mr Stetson, in the chair.

The minutes of the last preceding annual meeting were read and approved.

Obituary notices were presented as follows: Miss Alice Fletcher for Miss Sara A. Scull; Mr F. W. Hodge for Dr W J McGee, and Dr D. S. Lamb for Dr Robert Fletcher.

The following officers were elected and installed for the ensuing year: President, Mr George R. Stetson; Vice-President, Dr John R. Swanton; Secretary, Dr Daniel Folkmar; Treasurer, Mr J. N. B. Hewitt; Councilors: Mr George C. Maynard, Mr Felix Neumann, Dr I. M. Casanowicz, Dr E. L. Morgan, and Mr Francis LaFlesche.

Invitations to meetings of the National Academy of Sciences and the German Anthropological Association were presented and accepted.

WM. H. BABCOCK,
Secretary

DISCUSSION AND CORRESPONDENCE

NEGRO-UTE MÉTIS

The accompanying photographs were taken by the writer at the time of a visit, in April, 1910, to the Southern Ute reservation in southwestern Colorado, in the company of Mr John P. Harrington of the School of American Archæology at Santa Fe, New Mexico. The picture of greatest anthropological interest is figure 54, portraying,

FIG. 54.—Negro-Ute brother and sister.

as it does, a not very common instance (in that region, at least) of race mixture. The boy and girl are brother and sister, children of a Negro father and full-blood Ute mother. They live on the farm allotted by the Government to the mother. The Negro characters are most apparent. Some features, however, especially the hair, show Indian influence. The hair, particularly that of the girl, recalls a type found among many of the Oceanic blacks. Their skin has the distinctively Negro chocolate color. For comparison, I present, in figure 55, the picture of two typical Ute

FIG. 55.—Ute girls.

girls. The four children are of about the same age and were all pupils in the day-school a few miles north of Ignacio agency.

CLARK UNIVERSITY ALBERT N. GILBERTSON
WORCESTER, MASSACHUSETTS

NOTE ON THE FOX NEGATIVE PARTICLE OF THE CONJUNCTIVE MODE

FROM the position of *pwāwi*, the Fox negative particle of the conjunctive mode, directly after *ā-* and *wī-*, one would suspect that it should be classed as an initial stem. That such is the case can be shown by Kickapoo. I quote from Dr Jones' Texts: *ā'paitcahiāwātci*, THEY WERE NOT ABLE TO KILL THEM, which in Fox theoretically should be *ā'pwāwitcāhihāwātci*. I do not know if the exact expression occurs in Fox. But it is important to note that the idea of *killing* is derived solely from the context: *tcāhi* is an incorporated particle, *-h-* the instrumental, *ā—āwātci* the modal and pronominal elements. Hence unless *pwāwi* be an initial stem we have a verbal compound without any. In this connection I may add that *āgwi*, the Fox negative particle of the indicative, occurs somewhere in Jones' *Texts* in a verbal compound as an initial stem 'deny.' Unfortunately the reference is misplaced.

TRUMAN MICHELSON

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.

ANTHROPOLOGIC MISCELLANEA

The United States Indian Census.—Statistics of the Indian population of the United States and of Alaska collected at the Thirteenth Decennial Census, taken in 1910, are given in an advance bulletin soon to be issued by Director Durand, of the Bureau of the Census. It was prepared under the supervision of William C. Hunt, chief statistician for population.

Population.—The total number of Indians in the United States, exclusive of outlying possessions, in 1910, was 265,683, and in Alaska, 25,331. The corresponding figures for the census of 1900 were: United States, 237,196; Alaska, 29,536; and for the census of 1890, United States, 248,253; Alaska, 25,354.

According to these figures, which cover the last three enumerations only, the number of Indians in the United States decreased between 1890 and 1900 but increased during the last decade, the increase for the 20-year period 1890–1910 being 17,430, or 7 per cent. The data from the reports of the Commissioner of Indian Affairs, which are given in the bulletin, indicate that the number of Indians decreased from 1870 to 1890 and increased by about the same amount in the following 20 years. In Alaska the number of Indians reported decreased from 1880 to 1910 by 7,665, or 23.2 per cent. The figure for 1890 is probably incomplete, owing to the unexplored condition of the country at the time, so that the increase between 1890 and 1900 may be only apparent. The figure for 1880, though based in part on an estimate, is believed to be approximately correct. It is probable that the census returns for 1910 and 1900 are fairly comparable, but the difficulties of enumerating the Alaska Indians are so great that conclusions from the statistics must necessarily be tentative.

The number of Indian tribes reported for the United States in 1910 was 280, comprising 53 linguistic stocks. Of these tribes, 77 had more than 500 members each, while 42 were represented by 10 members or less; of the latter, 10 were represented by 1 member each. The most important tribes numerically were the Cherokee, with 31,489 members; the Navaho, with 22,455; the Chippewa, with 20,214; the Choctaw, with 15,917; and the Teton Sioux, with 14,284. These 5 tribes comprise all those represented by over 10,000 members; 39 other tribes had over 1,000 members each.

In Alaska 66 Indian tribes, forming 7 linguistic stocks, were reported. The principal ones, aside from the Southern Eskimo group, were the Kuskwogmiut, the largest tribe of the Eskimauan linguistic group, with 1,480 members, and the Aleut, with 1,451; 11 other tribes were represented by more than 500 members each.

Oklahoma had by far the greatest number of Indians reported for any state in 1910, 74,825, or more than one-fourth of all the Indians in the United States, while 7 other states reported more than 10,000 Indians each. These 8 states, all of which, except Wisconsin, are situated west of the Mississippi, contained together nearly three-fourths (72.2 per cent.) of the total number. Of the Eastern states, North Carolina, with 7,851, and New York, with 6,046, had the largest Indian population. While there were Indians in every state of the Union in 1910, the number in some was extremely small, 4 states—Delaware, Vermont, New Hampshire, and West Virginia—having less than 50 Indians each.

The proportion of Indians in the United States declined steadily from 1870, when it was 72.1 per 10,000 of the total population, to 1910, when it was 28.9. In Alaska the decline in the proportion of Indians has been even more pronounced, the number in each 10,000 of the total population decreasing from 9,871.4 in 1880 to 3,936.1 in 1910. Thus, while in 1880 almost the entire population of Alaska consisted of Indians, in 1910 they formed only about two-fifths of all the inhabitants.

Blood.—The Thirteenth Census was the first at which any returns worthy of tabulation were secured as to the proportion of full-bloods and mixed-bloods in the Indian population.

Of all the Indians in the United States in 1910, 56.5 per cent. were full-bloods and 35.2 per cent. mixed-bloods, while for 8.4 per cent. information on this point was not given.

Of the 93,423 Indians reported as mixed-bloods, 88,030, or considerably more than nine-tenths, represented a mixture of white and Indian, 2,255, of negro and Indian, and 1,793, of white, negro, and Indian, while 80 represented other mixtures, and for 1,265 the kind of mixture was not reported.

In Alaska, 84.7 per cent. of the Indians were of full-blood and 15.3 per cent. of mixed-blood; almost all the mixed-bloods were a mixture of white and Indian, the remaining few representing a mixture of Indian with Chinese and Japanese blood.

Twenty and six-tenths per cent., or 18,169 of the 88,030 persons of mixed white and Indian blood in the United States, were more than half Indian; 24,353, or 27.7 per cent., half Indian and half white; and 43,937,

or 49.9 per cent.—practically one-half of the total—were more than half white. Thus about four-fifths of the Indian and white mixed-bloods were at least half white.

The number of negro and Indian mixed-bloods reported, 2,255, is probably an understatement, owing to disinclination to admit negro blood. Of the number reported, 31.8 per cent. were more than half Indian, 32.3 per cent. half Indian and half negro, and 34.6 per cent. more than half negro, while for 1.3 per cent. the proportion of negro blood was not reported.

In each of five adjoining states—New Mexico, Utah, Arizona, Colorado, and Nevada—which comprise a large part of the interior arid plateau, the proportion of full-bloods among the Indians exceeded 85 per cent. Iowa and Mississippi, where the Sauk and Fox and the Choctaw tribes, respectively, have preserved a high degree of purity, were the only other states with at least 100 Indians in which more than 85 per cent. of the Indians were full-bloods.

The proportion of full-bloods was frequently higher in the states with a large Indian population; a notable exception is Oklahoma, which has by far the largest number of Indians, but reported a small proportion of full-bloods, 36.6 per cent. This low proportion in Oklahoma is no doubt due in part to the fact that the possession of valuable lands by the Indians encourages intermarriages between whites and Indians, and that persons with very little Indian blood are anxious to establish their claims as members of the Indian tribes, in order that they may be entitled to participate in the distribution of lands and moneys belonging to the Five Civilized Tribes in Oklahoma.

Sex.—Of the 265,683 Indians reported in the United States in 1910, 135,133, or 50.9 per cent., were males, and 130,550, or 49.1 per cent., females. The number of males to 100 females was 103.5. In Alaska the number of males in 1910 was 12,995 and of females 12,336, the ratio of males to 100 females being 105.3.

In 1910 the ratio of males to females among the Indians (103.5 to 100) was not as great as in the total population of the United States (106). Among the native whites of native parentage the number of males to 100 females was 104, and among the foreign-born whites 129.2, but among the negroes only 98.9.

In the United States, according to the returns, the number of males to 100 females was considerably less (101.7) among full-blood Indians than among those of mixed blood (106.4). This condition is reversed in Alaska, where the proportion of males to 100 females was 106.2 among

full-bloods and 100.3 among mixed-bloods. As the number of mixed-bloods in Alaska was comparatively small, however, no reliable conclusions can be based on the sex distribution among them.

The greater preponderance of males shown among the mixed-bloods than among the full-bloods in the United States is probably due in part to the tendency to report as white Indian women of mixed blood who are married to white men.

The figures apparently indicate that the excess of males decreases with the increase in the amount of white blood, but since the division by degree of mixture is only approximately accurate no reliable conclusion can be drawn from these proportions.

Age.—More than one-half (51.5 per cent.) of the Indians in the United States in 1910 were under 20 years of age, more than one-third (36.1 per cent.) from 20 to 50 years, and about one-eighth (12 per cent.) 51 years and over. In 1900 the proportion of young and old persons was slightly less and that of persons of the intervening age group slightly greater than in 1910. In Alaska in 1910 the proportion of young and of old persons was smaller and that of persons in the intermediate age period considerably greater than in the United States.

The fact that stands out most prominently is the high proportion of young persons among the mixed-bloods as compared with the full-bloods. A similar difference is to be noted between the mixed tribal bloods and the full tribal bloods. In both cases the difference may be accounted for in part by the fact that mixed marriages had not become common until within comparatively recent years. Another reason for the predominance of the young element among the mixed-bloods is no doubt found in the greater fertility of mixed marriages.

Fecundity and Vitality.—Information was collected by the Census Bureau in 1910 in regard to the number of children borne by every married woman. Only those women were included who were between 15 and 44 years of age, who had been married for at least one year, and who were neither widowed nor divorced nor married for a second or subsequent time.

The most significant fact is that, while for all classes of marriages the proportion resulting in no issue was 8.6 per cent., for marriages between full-bloods the proportion was 10.7 per cent., and for mixed marriages it was 6.7 per cent. Thus sterility is considerably less common in cases of miscegenation than in cases of marriage between full-bloods. Furthermore, the proportion of issueless marriages decreases directly as the amount of white blood in the married couple increases. Thus an inverse

relation between the amount of white blood in the married couple and the proportion of childless unions seems to be established.

A comparison of the figures for marriages between full-bloods with those for mixed marriages shows the greater fertility of the latter; a smaller proportion resulted in two children or less and in from three to five children than in the case of the pure marriages and a much higher proportion in six or more children. A larger proportion of the children having one white parent survive than of children both of whose parents are full-blood or mixed-blood Indians, but do not in themselves show whether this is due to conditions in the home or to greater virility of the offspring.

The results of the studies on sterility, on fecundity, and on vitality all indicate that the increase of the mixed-blood Indians is much greater than that of the full-blood Indians, and that unless the tendencies now at work undergo a decided change the full-bloods are destined to form a decreasing proportion of the total Indian population and ultimately to disappear altogether.

From Modern Danish Anthropology.—Of significance to modern anthropological investigation is the work of the Anthropological Committee in Denmark established in 1904 to carry out a general anthropological survey of the kingdom for the purpose of determining the racial characters of the Danish people, the results of which investigation are published in the following articles:

BURRAU, CARL. "Om Hovedets Form og Størrelse." (On the Form and Size of the Head.) Meddelelser om Danmarks Antropologi, København. Afdeling 2, p. 241. MCMVII.

—— "Korrelationen mellem Legemshøjden og Hovedets Dimensioner." (The Correlation between the Height of the Body and the Dimensions of the Head.) Afdeling 3, p. 275. MCMIX.

HANSEN, SØREN. "Om Hovedets Breddeindeks hos Danske." (The Breadth-index of the Head in Danes.) Afdeling 2, p. 221. MCMVIII.

—— "Om Hovedets Størrelse hos voksne Mænd og Kvinder." (The Size of the Head in Men and Women.) Afdeling 1, p. 69. MCMVII.

—— "Om Legemsvægt og Legemshøjde." (On the Weight and Height of the Body.) Afdeling 2, p. 203. MCMVIII.

—— "Om Haarets og øjnenes Farve i Danmark." (On the Color of the Hair and Eyes in Denmark.) Afdeling 3, p. 285. MCMIX.

HERTZ, POUL. "Københavnske Kommuneskolebørns Vækstforhold." (Investigations on the Growth of Children in Copenhagen Elementary Schools.) Afdeling 4, p. 319. MCMXI.

MEKEPRANG, E. P. "De Værnepligtiges Højde i Danmark." (Height of the Danish Conscripts.) Afdeling 1, p. 11. MCMVII.

RAMBUSCH, S. H. "Skolebørnenes fysikalske Forhold i nogle midtjydske Sogne." (The Physical Characteristics of School Children in some Parishes in Mid-Jutland.) Afdeling 2, p. 173. MCMVIII.

STEENSBY, H. P. "Foreløbige Betragtninger over Danmarks Raceantropologi." (Preliminary Observations on the Racial Types in Denmark.) Afdeling 1, p. 83. MCMVII.

The collective, experimental, and statistical method has been employed; 5,000 adults of both sexes have been measured and otherwise examined according to generally adopted anthropological principles. Besides the principal investigation several special researches have been carried out, the whole being financed at public expense.

One conclusion reached is that an additional racial type is to be found in Denmark; in other words, the current view that only brachycephalic and dolichocephalic types, according to the system of W. Z. Ripley, make up the population of Denmark, should be readjusted to include another wholly different racial type. Further conclusions concern, among others, average head, stature, and average intercorrelation figures. In the case of head indices the breadth index or formula $\frac{\max \cdot B \cdot x10.0}{\max \cdot L.}$ was used. The number of heads measured equaled 4,000 adults, both sexes, ages 20–65 years, with average age 34.7 for men and 28.8 for women, and only Danes born in Denmark, including all districts, were taken. The greatest (average) length of head was 193.6 mm. for men, 184.1 mm. for women; greatest (average) breadth was 156.0 mm. for men, 149.9 mm. for women; the average index was 80.7° men, 81.5° women, therefore 81° as a whole. Average stature measurements were 169.45 cm. for men, 159.22 cm. for women: in relation to average length of head 11.42 for men and 11.52 for women.

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Mongolian Sand-painting.—In a communication to Dr Aleš Hrdlička, of the United States National Museum, Mme Karnakova, a Russian lady who has conducted ethnological investigations among the Mongolians and has published a number of papers on the habits and religion of that interesting people, writes as follows regarding their sand-paintings:

"It is very strange, but there are very many analogies between the sand-paintings of the Indians and those of the Mongolians. I shall say a few words about it—perhaps they will interest someone. Sand-painting among the Mongolians is a part of a great secret ceremony which the lamas make every summer. The public is not admitted to the ceremony, and only a few men outside of the lamas can ever see it. Due to special circumstances I have been able once to be present. They

regard me as one of themselves; nevertheless, they stipulated that I should wear at this visit 'all clean clothes.' I saw a wonderful picture which hardly looked as if made by human hands. At the center of the sanctuary stood a table. Eight young lama artists were selected to make the sand-painting, and one of the chief lamas was there to direct and criticize the work. They made a drawing on the table, then they took sharp pointed conical copper tubes and into these put the various powders and sand. These were prepared seven days before from sandstone, the grindings being mixed with curds, allowed to dry, and the whole reduced to fine powder. Each of the copper tubes had a kind of comb on one side, and by moving a long needle over the teeth of this comb the sand from the tube was deposited exactly as desired. The pigments were red, yellow, green, blue, black, and white, as among the Indians; and the lamas made also a circle of sand on the table. Each artist drew his own part. The work lasted seven days. After being finished, there followed a form of worship, again of seven days, during which twenty-one lamas sat in the church from morning to evening chanting and praying. Next the lamas gathered all the sand from the paintings, put it into a vase, and with sacred music, and a crowd of people following, went down to the river. The chief of the lamas then threw the sand into the water, took up some water into the empty vase, and gave it as a drink to the people who came to pray to God on this occasion."

Eskimo Collection in Christiania.—A collection of interest and value to students of North American ethnology is that in the "Gjöa Hall" of the Ethnographic Museum of the University of Christiania. It consists of the material collected by Captain Roald Amundsen, now famous as the discoverer of the South Pole, on his voyage of exploration in the ship *Gjöa*, in the years 1903 to 1907, on which he determined the location of the north magnetic pole and navigated the whole extent of the Northwest passage.

Among the specimens are two sledges from the Eastern Eskimo, a gift from the ill-fated Danish explorer, Mylius Erichsen. One shows the common type from Upernivik; the other, from Cape York, is of a modernized type, believed by the curator of the museum to show the influence of Admiral Robert E. Peary. This sledge belonged to the Eskimo Kolotengwa, who was the companion of the Norwegian explorer, Eivind Astrup. Kolotengwa had received it from another Eskimo. When the latter died, the sledge, having belonged to a dead person, became unlucky; hence the owner gave it to Mylius Erichsen. There is also a

kaiak from western Greenland and a small number of objects from the most westerly Eskimo tribes.

But the greater part of the collection is from the Netchilli tribe, of the Central Eskimo, among whom Amundsen lived for two winters. It includes clothing of men, women, and children, very different from the dress of the Greenland Eskimo. A few articles are made of copper plate, believed to have been secured from wrecked ships. Besides, there are vessels for lighting and cooking, some vessels made of the skull of the muskox, the dress and drums of a shaman, several kaiaks, etc. The collection presents a complete survey of the culture of the tribe. One of Amundsen's Eskimo dogs, mounted, is seen hitched to a sledge.

A very interesting account of the Netchilli is found in Amundsen's book, *The Northwest Passage*. The curator of the Museum in Christiania is Dr Yngvar Nielsen, Professor of Ethnography at the University. He is assisted by Dr Olaf Solberg, who has done important work on Eskimo archeology.

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School of American Archæology.—The summer session of the School of American Archæology will be held in New Mexico from August 1st to 29th inclusive. It is announced that in American archeology and ethnology there will be few formal lectures, but the primitive arts and industries—pottery making, blanket and basket weaving, shell and metal work, flint-chipping, and domestic processes—as well as ceremonies, language, and music, will be demonstrated by Indian families living in the placita of the Governor's Palace, the headquarters of the School at Santa Fe. There will be excursions to important archeological and historical sites, with field lectures, including a five-day expedition to El Rito de los Frijoles, where the field work of four seasons past will be studied. At Quarai, one of the most important ruined pueblos of the Manzano district, the encampment will last a week, and the opening work on a new site, which will probably require several seasons for excavation, will be demonstrated. The following faculty for the season of 1913 has been announced: Edgar L. Hewett, Director, School of American Archæology: field lectures, Recent Field Work of the School, two lectures. Lewis B. Paton, Hartford Theological Seminary: The Archeological History of Palestine, nine lectures. Henry R. Fairclough, Leland Stanford Junior University: Roman Archeology and Art, nine lectures. Mitchell Carroll, General Secretary, Archæological Institute of America: The Women of Ancient Greece, four lectures. Ralph E.

Twitchell, Historian: archives work; History of the Southwest, two lectures. Kenneth M. Chapman, Assistant Director, School of American Archæology: field sketching excursions; Pueblo Art, two lectures. Sylvanus G. Morley, School of American Archæology: field lectures; Recent Work in Yucatan, two lectures. John P. Harrington, School of American Archæology: laboratory work in linguistics; Recent Field Work in California, two lectures.

Sir John Lubbock, first Baron of Avebury (created 1900), died May 28, 1913. Lord Avebury was born in London, April 30, 1834, and was educated at Eton and at home. He served as Member of Parliament from Maidstone, 1870–80, and during the next twenty years represented the University of London. He was a member of various commissions, including the Royal Commission on the Advancement of Science, and served as president of the British Association for the Advancement of Science in 1881 (jubilee year), the Ethnological Society, the (Royal) Anthropological Institute, the African Society, the Society of Antiquaries, the International Institute of Sociology, and the International Association of Prehistoric Archæology, and was also a member of many other domestic and foreign societies. His writings covered a wide range of subjects, but his best known work is *The Pleasures of Life*, which has reached an edition exceeding a quarter of a million copies in England, and has appeared also in more than fifty foreign editions. To archeologists Lord Avebury is best known by his *Prehistoric Times* and *The Origin of Civilization and the Primitive Condition of Man*, each of which has reached its sixth edition. His latest work in anthropology, published in 1911, is *Marriage, Totemism, and Religion.*

Field Museum Researches.—The Joseph N. Field expedition to the South Pacific islands has concluded its work under Dr A. B. Lewis, who has returned to Chicago, and the vast amount of material received by the Museum as a result of his survey and collections will be catalogued, labeled, and prepared for installation. During the four years devoted to this research Dr Lewis gathered many thousands of specimens, and the collection already forms one of the largest, most important, and most interesting ever acquired by the Museum through field work. Practically every field of Melanesia is represented, and the specimens have been supplemented by numerous photographs, anthropometric data, and phonographic records.

Rev. Gilbert L. Wilson, of Minneapolis, has submitted to the American Museum of Natural History the report of his investigations of

the agricultural customs of the Mandan and Hidatsa Indians, which, says *The American Museum Journal*, "promises to be one of the most complete and suggestive studies of this particular phase of American Indian culture. It brings out among other things the aboriginal origin of methods of fertilization and propagation. Certain fields were not only the habitual planting places of particular families, but the right to them was hereditary. This is important because it approaches the modern conception of individual ownership of land, a rarity among the communal Indian tribes." A series of primitive agricultural implements from the Mandan and Hidatsa has been received by the Museum and placed on exhibition.

THE eighth annual meeting of the American Association of Museums was held in Philadelphia, June 3–5, 1913, with about one hundred members in attendance. Dr Henry L. Ward, of the Milwaukee Museum, presided. In addition to the reading of papers the program was so arranged as to provide time for the study of important museum collections at the Academy of Natural Sciences, University Museum, Commercial Museum, Wistar Institute of Anatomy, Academy of Fine Arts, and Memorial Hall. The officers elected for the ensuing year are: *President*, Benjamin Ives Gilman, Museum of Fine Arts, Boston; *Secretary*, Paul M. Rea, Charleston Museum, Charleston, S. C.; *Treasurer*, William P. Wilson, The Commercial Museum, Philadelphia. The next annual meeting will be held in Chicago with a supplementary session in Milwaukee.

THE forty-fourth general meeting of the Deutsche Anthropologische Gesellschaft will be held in Nürnberg, August 3–9. The final program of the meeting, which will be issued in June, will be sent to the members of the American Anthropological Association, the Anthropological Society of Washington, and the American Ethnological Society of New York on request. In connection with the meeting a three days' excursion is contemplated for the study of the prehistoric remains in southern Bavaria and for the inspection of the museums in Munich. The Secretary-general of the Deutsche Anthropologische Gesellschaft is Prof. Dr G. Thilenius of Hamburg.

THE American Museum of Natural History will support a number of field expeditions this summer. Dr Goddard left early in June to investigate the Beaver Indians of the Peace River territory. Mr Nelson made some observation studies of Spanish caves under the direction of Professor Obermaier. Mr Skinner took up a reconnoissance of the Plains Ojibwa and Western Cree, and expects later to return to the

Menomini field. Dr Spinden rounded out his researches among the Rio Grande Pueblo Indians. Dr Lowie returned to the study of the ceremonial practices of the Hidatsa and Crow.

At the annual commencement exercises of Clark University, Worcester, Mass., held on Tuesday, June 17, 1913, the Degree of Doctor of Philosophy was conferred on the following students in the Department of Anthropology: Mr Albert Nicolay Gilbertson (A.B., University of Minnesota, 1908; A.M., 1909), thesis "Some Ethical Phases of Eskimo Culture." Miss Miriam van Waters (A.B., University of Oregon, 1908; A.M., 1910), thesis "The Adolescent Girl among Primitive Peoples."

The second Loubat prize has been awarded to Dr John R. Swanton, of the Bureau of American Ethnology, in recognition of his two publications, *Tlingit Myths and Texts*, and *Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico*, issued by that Bureau. The award, which is made every five years, carries with it the sum of four hundred dollars. The first prize was awarded for a work on the commercial history of the United States.

At the spring meeting of the San Francisco Society of the Archæological Institute of America held in conjunction with the Pacific Association of Scientific Societies, April 10–12, the following papers relating to American anthropology were read, following an address by Professor John C. Merriam, of the University of California, on "Excavations in the Asphalt Beds of Rancho La Brea."

E. W. Gifford, Assistant Curator of the Anthropological Museum of the University of California: "Notes on the Age of California Shellmounds in the Light of their Molluscan Contents."

William Frederick Bade, Professor on the Frederick Billings Foundation for Old Testament Literature and Semitic Languages, Pacific Theological Seminary: "Metal Taboos Among the Greeks."

A. L. Kroeber, Associate Professor of Anthropology and Curator of the Anthropological Museum of the University of California: "The Problem of Cultural Development in the Shellmounds of California."

John P. Harrington, of the School of American Archæology, Santa Fe: "Stone Idol Frauds of Cochiti Pueblo."

Herbert E. Bolton, Professor of American History, University of California: "New Materials for Southwestern Ethnology."

John C. Merriam, Professor of Palæontology and Historical Geology, University of California: "Recent Discoveries of Artificially Formed Implements Presumed to Occur in Pleistocene Beds at Rancho La Brea and San Pedro, California."

Thomas T. Waterman, Instructor in Anthropology, University of California: "The Making of Myths."

A. L. Kroeber: "Linguistic Evidence of the Pre-history of California."

In the Peabody Museum of Harvard University the following appointments have been made, dating from May 1: Frederic W. Putnam, A.M., S.D., honorary director; Charles C. Willoughby, assistant director; Roland B. Dixon, Ph.D., librarian, and curator in ethnology; Charles Peabody, Ph.D., curator in European archæology; Alfred M. Tozzer, Ph.D., curator in Central American archæology.

Mr Nels C. Nelson, of the American Museum of Natural History, New York, is visiting Europe for the purpose of studying archeological results and methods. He will inspect the principal caverns and other sites where the remains of early cultures have been found, and gather material for a type model of such deposits.

Professor George Grant MacCurdy, of Yale University, lectured on the evening of April 18th, at the annual meeting of the American Philosophical Society, Philadelphia, his subject being The Antiquity of Man in the Light of Recent Discoveries. The lecture was followed by a reception.

We regret to record the death, on February 10th last, of Dr K. Penk, known to anthropologists chiefly by his *Kultur und Rasse* (1904) and by his contributions to *Politisch-anthropologische Revue* and *Mitteilungen der Wiener anthropologischen Gesellschaft.*

A pamphlet of "Suggestions for Investigations in Human Geography in Britain" has been written by Dr H. J. Fleure and Mr W. E. Whitehouse, and is issued from the registrar's office in the University College of Wales, Aberystwyth.

A large collection from the Malecite Indians, gathered by G. A. Paul, the hereditary chief of the Penobscot Indians, has recently been placed on view in the American Museum of Natural History, New York.

The famous prehistoric camp known as Maiden Castle, near Dorchester, England, has, at the suggestion of the King, been purchased by the Duchy of Cornwall, and will now be carefully preserved.

In the interest of the Geological Survey of Canada, Dr John Alden Mason has gone to Great Slave Lake for the purpose of investigating the Northern Athapascan tribes of that region.

Professor Hampel, one of the directors of the Hungarian National Museum and the leading authority on the pre-Christian archeology of Hungary, died at Budapest, March 25.